Anti-Infective R&D Partnership, L.P.

200 Limited Partnership Interests

$10,000,000

Price per unit: $50,000

Anti-Infective R & D Partnership, L. P. ("the Partnership") is offering two hundred (200) Limited Partnership units at $50,000 per Unit.

The Partnership, on a "best efforts" basis, is offering the Units (the "Offering"). All proceeds from the sale of the Units will be deposited in an escrow account until at least $1.5 million has been deposited in escrow, after which all proceeds of the Offering will be released from escrow and made available to the Partnership. Any funds raised after the minimum has been reached will be released directly to the Partnership. GLSynthesis, Inc, the general partner of the Partnership ("GLSynthesis" or the "General Partner") may terminate this Offering at any time.

An investment in the units is highly speculative. Prospective investors should carefully review and consider the matters described in this memorandum.

These securities have not been registered with or approved or disapproved by the Securities and Exchange Commission (the "SEC") or any state securities commission, nor has the SEC or any such state securities commission passed upon the accuracy or adequacy of this private placement memorandum. This private placement memorandum does not constitute an offer in any jurisdiction in which an offer is not authorized.

The Information contained in this memorandum is confidential and intended only for the entity or person to which or whom it is given to or transmitted electronically.

Price to Investors	**Commissions**	**Proceeds to Partnership**
$50,000 per Unit	$0	$50,000
Total (assuming all 200 Units are sold)	$0	$10,000,000

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Summary of the Offering

Investors should read this Memorandum carefully before making any investment decision. Additionally, investors should consult their own advisors to fully comprehend the consequences of investing in the Partnership. The following summary does not purport to be complete and is qualified in its entirety by more detailed information appearing elsewhere in this Memorandum and the Appendices attached to it.

A. The Partnership

Anti-Infective R&D Partnership, L. P. ("the Partnership") is a Massachusetts Limited Partnership. GLSynthesis, a Massachusetts corporation engaged in the business of chemical synthesis, drug discovery, and drug development, is the General Partner. Funds to support the General Partner's drug discovery activities (approximately $40 million) have historically come principally from the National Institutes of Health (NIH).

NIH grant funds for the most advanced GLS project are now almost exhausted. Other projects, chemically related to the NIH-sponsored work, require basic science work before they can become eligible for NIH grant funding. Equity financing is needed for both. Limited Partners will receive 80% of any proceeds from Partnership activities.

The General Partner's headquarters are located at One Innovation Drive in Worcester, Massachusetts. Its telephone number is (508) 754-6700.

Partnership operations

Partnership activities have not yet commenced, but will begin once funds are available. The General Partner is currently doing final animal testing and report writing for the first project to be undertaken by the Partnership, development of a small molecule to combat diarrhea caused by *Clostridium difficile* Infection, and is working toward Investigative New Drug (IND) status from the Food and Drug Administration (FDA). If the Partnership sells the entire $10 million of Units being offered, the Partnership intends to complete the IND and Phases 1 and 2 of human clinical trials of the drug of Project #1 and to begin R&D studies on three related projects.

Liquidity and Capital Resources

Assuming the minimum proceeds of the Offering are raised ($1.5 million), the Partnership believes that it will achieve IND status of Project #1 and become eligible for licensing or acquisition funds from operating companies. It is more likely, however, that licensing or acquisition activity by operating companies will be much more vigorous when Phase1 and 2 human clinical trials of the drug of Project #1 are completed. See "Use of Proceeds."

B. The Offering

Securities Offered:	Up to 200 Partnership Units are available in this Offering.
Price per Unit:	$50,000 per Unit. Minimum purchase is one Unit.
Minimum Investment:	One (1) Unit, however, the General Partner, at its sole discretion, may accept subscriptions for less than one (1) Unit.
Offering Period:	Starting on the date hereof and terminating on June 30, 2014, unless extended by the Partnership for up to an additional sixty (90) days.
Multiple Closings:	The Partnership expects to have at least two closings – an initial closing amounting to at least $1.5 Million, i.e. sufficient funds to complete the IND proposed for project #1, and other closings for funds in excess of $1.5 Million. After the initial close, the General Partner may use the funds at its sole discretion.
Investor Suitability:	The Units are being offered and sold solely to "accredited investors" as defined pursuant to Rule 506 of regulation D of the Securities Act of 1933, as Amended (the "Act") pursuant to an exemption from registration. Subscribers will be required to submit a completed Subscription Agreement so that the Partnership can determine whether investor suitability requirements are satisfied (Appendix F).
Subscription Agreement:	Purchases of the Units must be made pursuant to the Subscription Agreement (Appendix F). The Subscription Agreement contains, among other provisions, representations, and warranties by the Partnership, investor representations by the subscriber, and restrictions on transferability of the Units.
Use of Proceeds:	The Partnership intends to use the net proceeds from this Offering for funding research and development activities, working capital requirements, administrative and financial services, and licensing expenses.
Limited Transferability:	The Units being sold will not be registered with the SEC or qualified under the securities laws of any state, but will be offered and sold pursuant to an exemption thereof. Therefore the Units may not be resold or otherwise distributed without registration or qualification under the Act and/or any other applicable securities laws or the availability of an exemption therefrom. Furthermore, there is no market for the Units and no market is expected to develop.
Subscription Agreement:	See Appendix G for a draft agreement.

C. Selected financial information

The business plan developed by the Partnership (the "Business Plan") contains certain projections with respect to its anticipated future operations. The financial projections and the assumptions upon which they are based represent forecasts of results that might be achieved should all the stated assumptions contained therein be realized.

D. Risks associated with forward-looking statements in this memorandum

This Memorandum contains forward-looking statements regarding the plans and objectives of management for future operations, including plans and objectives related to the development of the Partnership's business. The forward-looking statements included in this memorandum are based on current expectations that involve numerous risks and uncertainties. The Partnership's plans and objectives are based on a successful execution of the Partnership's strategy and assumptions that the Partnership will be profitable, that the market for products and services will not change materially or adversely, and that there will be no unanticipated material adverse change in the Partnership's operations or business. Assumptions relating to the foregoing involve judgments with respect to, among other things, future economic, competitive and market conditions and business decisions (most of which are beyond the control of the Partnership), are difficult or impossible to predict accurately.

Although the Partnership believes that its assumptions underlying the forward-looking statements are reasonable, any of the assumptions could prove inaccurate. As a result, there can be no assurance that the forward-looking statements included in this Memorandum will prove to be accurate. In light of the significant uncertainties inherent in the forward-looking statements included in this memorandum, the inclusion of such information should not be regarded as a representation by the Partnership or any other entity that the objectives and plans of the Partnership will be achieved**.**

I. Description of the General Partner

A. History

GLSynthesis was organized as a Massachusetts corporation in 1996 by founders George E. Wright, Ph. D., Professor of Pharmacology at the University of Massachusetts Medical School, Jan L. Chen, Ph. D., a senior scientist in the chemical industry, and Hongyan Xu, Ph. D., a senior chemist in the biotechnology industry. GLSynthesis began in laboratories at the University of Massachusetts Medical School located in Worcester, Massachusetts and at the adjacent Massachusetts Biotechnology Research Park. GLSynthesis currently employees 14 persons, of whom nine are chemists, three are pharmacologists, and two are support staff. Summaries of General Partner grants and contracts, patents and corporate agreements are in Appendix E and citations to scholarly publications of th3e General partner are in Appendix F.

The original mission of GLSynthesis was to do custom chemical synthesis and other contract work for commercial customers. Subsequently, the major foci of GLSynthesis have been to perform drug research and development, and to develop and manufacture fine chemicals and pharmaceutical intermediates via subcontractors in China. All of the aforementioned tasks were precursors to a longer-term plan to discover and develop new drugs for the treatment of human infirmities. Currently, GLSynthesis' subcontractors in China are manufacturing commodity chemicals for customers brought to it by management. We expect continuing revenues from this source. In its Worcester, MA, facility, GLSynthesis continues to provide custom services (compound synthesis, analytical studies and pharmacology in rodents) for commercial customers.

GLSynthesis has received revenues for drug discovery and development largely from government grants, principally from the National Institutes of Health (NIH). (GLSynthesis has recently been awarded $3.2 million from NIH (3 years, starting 7-1-13) to begin preclinical (animal) studies of GLS409, a novel antithrombotic drug. NIH has awarded another grant on 9-1-13, worth about $220,000, to GLSynthesis for work on a topical "soft" anti-androgen drug jointly with Restorgenex Corp. Neither of these new projects will be owned or licensed by the Partnership.)

The recent and 5 year projection of GLSynthesis's financial performance are presented in Appendix A. All historical figures originate from audited financials.

B. Corporate structure

Historically, GLSynthesis has conducted custom projects, developed chemical synthesis and drug discovery projects, and arranged for manufacturing by Chinese subcontractors. Its facility conducts and manages all of the custom and R&D projects, the chemical manufacturing contracts, and the related administrative and marketing tasks. The Partnership will focus exclusively on anti-infective drug discovery and development projects.

C. Facilities

GLSynthesis occupies about 7,500 ft^2 of laboratory and office space in the Massachusetts Biotechnology Research Park, located in Worcester, Massachusetts adjacent to the University of

Massachusetts Medical School. The facilities include laboratories for organic synthesis with a total of 14 fume hoods, a kilo-scale cGMP production lab with walk-in hood, analytical chemistry labs, labs for pharmacology and animal handling, three chemical storage rooms, six offices, and an office suite. Major equipment to support drug discovery is available within the facilities, including standard and large-scale synthesis equipment, a 300 MHz NMR spectrometer, an ion trap LC-MS system, analytical and preparative HPLCs, fluorescence spectrometers, and equipment for *in vitro* and *in vivo* pharmacology. Support services, such as safety and hazardous waste storage are handled internally. Some animal care services are contracted with the University of Massachusetts Medical School.

GLSynthesis has an approved Animal Welfare Assurance (A4556-01) from NIH, and is an R class research facility as designated by USDA. GLSynthesis holds licenses from the United States Drug Enforcement Administration and the Massachusetts Department of Public Health to store and handle controlled substances.

D. Collaborations

GLSynthesis collaborates with, or has collaborated with, 4 firms and 5 universities. With Bridge Pharma, Inc., GLSynthesis has developed drugs for urinary incontinence, atopic dermatitis and asthma; with Microbiotix Inc., antibacterial drugs have been and are being developed; with Hygeia Pharmaceuticals, Inc. (now Restorgenex Corp.),"soft" topical antiandrogen drugs are being developed, and with ZATA Pharmaceuticals, Inc., a grant application is pending to develop drug-like oligonucleotide therapeutics. Universities include (active) Louisiana State University, Harvard Medical School, Wayne State University, and (inactive) University of Massachusetts and New York University.

E. Governance and Ownership

The executive officers of GLSynthesis are George E. Wright, Ph. D., Chairman and CEO, and Jan L. Chen, Ph. D., President. Drs. Wright and Chen serve on the Board of Directors with Mark M. Turnbull, Ph.D., a Professor of Chemistry at Clark University in Worcester, Massachusetts.

The founders, Drs. Wright and Chen, hold approximately 91% of the issued and outstanding capital stock of GLSynthesis on a fully diluted basis.

F. Experts

Corporate counsel for GLSynthesis is Jeffrey L. Donaldson, an attorney with the law firm of Mirick O'Connell in Worcester, Massachusetts. Intellectual Property counsel is J. Cooper McDonald, J.D., a partner with the law firm of Clark & Elbing in Boston, Massachusetts. Accounting and audit services are provided by Charles Swartz, CPA, a partner with the accounting firm of Swartz, Polachek & Company, P.C. in Needham, Massachusetts.

G. Service Providers

Banking services are provided by TD Bank, N.A., and corporate liability insurance is handled by Shea and Poor, Inc. in Worcester, Massachusetts.

II. Description of the Partnership

The Partnership will exploit novel antibacterial and related anti-infective drugs, the subject of issued and pending US and international patents owned exclusively by the General Partner. In addition to other exclusive drug discovery projects of the General Partner, several drug research projects involve patented methods and/or compositions of matter of which GLSynthesis scientists are inventors and in which GLSynthesis has equity stakes or royalty-sharing arrangements. Pharmaceutical Development Agreements in various therapeutic areas have been negotiated with Microbiotix Inc. and Bridge Pharma Inc., and GLSynthesis owns shares of Hygeia Pharmaceuticals Inc. and Canterbury Labs LLC, both of which have recently merged into Restorgenex Corp.

Among these various projects, GLSynthesis has discovered and is developing an antibacterial drug candidate, the anticlostridial compound GLS362E (project #1). This compound is an inhibitor of Gram-positive bacterial DNA polymerase IIIC, a validated antibacterial target, with unique *in vivo* activity orally against acute and recurrent *Clostridium difficile* Infection (CDI). This is a disease usually contracted in hospitals by immune system-compromised patients; it is responsible for 250,000 infections and 14,000 deaths in the United States annually, and at least $1B in excess medical costs per year. Preclinical studies (required animal studies) of GLS362E are now mostly complete, and indicate a strong potential of the drug for further deveopment. An offshoot of this project is our recent discovery that isosteres related to the GLS362E, viz. GLS375C and related compounds, have potent activity *in vitro* against MRSA, VRE and PRSP strains in culture. Other drug discovery and development projects focusing on anti-viral and anti-parasitic drugs are in early stages of investigation.

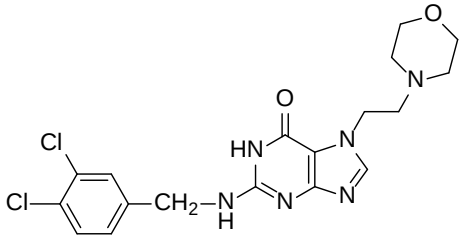
GLSynthesis has formed the Partnership to expand its drug discovery and development projects that historically have been financed by NIH grants and company income, through preclinical studies in animals. The first and principal project involves the drug GLS362E as oral treatment of CDI (Project #1). Because NIH funds are not likely to be available for the next phases (completion of preclinical studies and early human trials), a private investment of $8 million will enable completion of all studies through Phase 2 clinical trials of GLS362E, a point at which the project will have maximum value (which would be an aggregation of license fees, milestone payments, and royalties). Other projects, exploring the feasibility of using anti-infective agents with similar chemistries, have been supported with internal resources, but now require outside financing. Three anti-infective agents, targeted against antibiotic-resistant infections (MRSA, VRE, PRSP) (Project #2), the newly-discovered link between Herpes simplex virus and Alzhiemer's Disease (Project #3), and malaria (Project #4), are of particular interest, and will be studied with support from this Offering. Each of projects #2-#4 will require about $0.5 million, and an additional $0.5 million will be required for associated administrative costs, data analysis, and project management. It is possible that funds in excess of the funds being raised in this Offering will be needed if the study results of the referenced three anti-infective agents are positive.

When distributions are made (see Appendix B), the Limited Partners will receive their investment back on a first priority basis. The Limited Partners and the General Partner will share 80:20, respectively, in any further distributions, including license fees, milestone payments, royalties, and any other forms of payment.

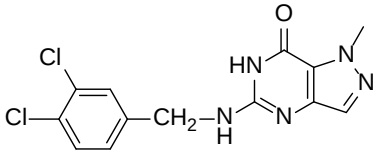
A. Scope

The common thread connecting our various drug discovery/development projects is the chemistry of pyrimidines, purines, and related compounds, resulting from previous work in which the biological activity of these compounds has been discovered by rational design, serendipity and a combination of these. As chemistry is both the thread and the starting point for all drug development activities, the anti-infective projects outlined below have considerable overlap: The following is a Table which describes the projects and their status, including chemical structures of the lead drug/compound in each case:

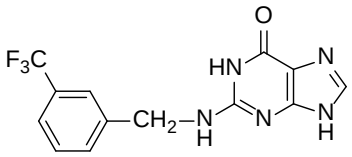
PROJECT NAME	Lead structure	STATUS
1. C-diff drug	GLS362E	Nearing IND
2. Anti-bacterials	GLS375C	Early discovery
3. Anti-herpes drug	GLS122E	Development
4. Anti-malarial drug	GLS288E	Pre-discovery



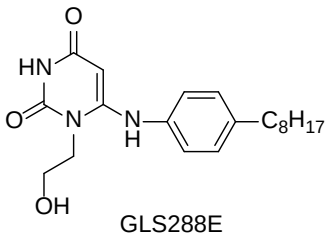
GLS362E



GLS375C



GLS122E



GLS288E

Project #l - Compound GLS362E is a 7-substituted derivative of N2-(3,4-dichlorobenzyl)guanine (DCBG) that has been shown to be effective in curing *Clostridium difficile* infections in hamsters and to prevent recurrent infections and death in the same species . at non-toxic doses. This animal model is the industry-wide model used for determining efficacy of new drugs against Cdiff. Preclinical studies toward the IND have been completed successfully, and a nonconfidential summary of this drug's status is found in Appendix C. Table 2 in Appendix B summarizes the steps and costs needed to advance this drug through Phase 2 human clinical trials. In addition, a letter of intent for a related basic science study of DNA replication mechanism in *C. difficile* will be submitted in March, 2014, to the Human Frontier

Science Program; this application will be joint with the Medical School, University of Leiden, Netherlands, and the Institute of Molecular Genetics, CNR, Pavia, Italy.

Project #2 – Drug for Resistant Bacterial Infections - We plan to complete a study of "isosteres" of 7-substituted-DCBGs, specifically compounds related to GLS375C, as an antibacterial for treating antibiotic-resistant infections caused by, among other pathogens, MRSA (methicillin-resistant *Staphylococcus aureus*), VRE (vancomycin-resiatant enterococci) and PRSP (penicillin-resistant *Streptoccus pneumoniae*). MIC values for some compounds have been acquired from, and ADME properties will be measured by, collaboration with Microbiotix Inc. Toxicity and efficacy against experimental infections in mice will enable designation of one of these drug candidates for detailed mechanism and selectivity experiments. Financial requirement for this project is $0.5M over 12-14 months. A small business grant application to NIH covering this project will be resubmitted by April 5, 2014.

Project #3 - Anti-herpes and anti-Alzheimer's Disease (AD) drugs – a. There is some evidence that candidate compounds might be effective against recurrence of latent Herpes simplex infections in the form of an orally available prodrug. The Partnership, in collaboration with LSU Eye Center and the University of Cincinnati, will study these compounds (currently supported by a NIH small business grant). b. The compounds will also be studied for their relevance to the relationship between Herpes simplex latency and Alzheimer's Disease. The financial requirement for these projects is $0.5M over 12-14 months. Discussions with a potential collaborator from New York University are ongoing, with the goal of submission of a SBIR application for part b. above by April 5, 2014.

Project #4 (anti-parasitic drugs) - Antimalarial research currently involves the lead compound GLS288E, an inhibitor of the *Plasmodium falciparum* uracil-DNA glycosylase (UDG). This project involves collaborations with the Institute of Molecular Genetics, CNR, Pavia, Italy and Mahidol University, Bangkok, Thailand. The financial requirement for this project is $0.5M over 12-14 months. Joint grant applications for this project, including an application in response to the program "International Collaborations in Infectious Diseases Research" of NIH due on March 7, 2014, among others, will be submitted. Other parasitic diseases, e.g those caused by *Acanthamoeba histolytica*, are under consideration.

B. The Market

The lead drug emanating from each of these projects will ultimately be licensed to large pharmaceutical companies. The "pharma" industry consists of at least 12 large global firms (over $10 billion in annual sales), a plethora of middle-sized companies (perhaps 100 enterprises with annual revenues of between $10 million to $10 billion), and a multitude of smaller companies and research centers (each with annual revenues under $10 million) supported by grants, contracts, product sales, and risk capital.

The characteristics of the Partnership's market are materially different from the ones identified in most ventures. They are different because small drug developers, for the most part, sell their intellectual property to entities that can afford and justify the government-required, long and very expensive series of drug trials. Such requirements mean that small drug developers have one of four choices:

1) Conduct a public offering to acquire sufficient funds to run human trial

2) Sell or license the innovation to a large pharmaceutical company

3) Access private equity funds to advance their R&D program, which might improve their prospects for selling or licensing their innovations

4) Turn over the innovation to the NIH, which may, in its sole discretion, finance and conduct drug trials

Of the available choices, only the third choice is practical for GLSynthesis. Conducting a public offering is not a viable option for GLSynthesis at this time; selling or licensing its intellectual property to a large pharmaceutical house is unrealistic, because GLSynthesis has no data related to human medicine (the usual requirement for such transactions); and transferring the data to NIH, which could conduct further work, is an indefinite and rare circumstance. Therefore, GLSynthesis's market exists, realistically, only if private equity funds advance projects through (ideally) two stages of human trials.

Assuming that funds are available and the projects advance in satisfactory fashion through early human trials, the Partnership will be in an ideal position to market its findings. Not every large pharmaceutical company will want to acquire rights, of course, but in the case of the Partnership's projects, the General Partner believes that vigorous markets will exist for its *Clostridium difficile* and other anti-infective drugs. The 15 leading firms that may acquire the rights are: Abbott Laboratories, Inc., Amgen, Inc., Astra-Zeneca, Inc., Bayer Healthcare Inc., Boehringen Ingelheim GmbH, Bristol Meyers Squibb, Inc., Eli Lilly & Co., Inc., Glaxo Smith-Kline, Inc., Johnson & Johnson, Inc., Merck and Co., Inc., Novartis, Inc., Pfizer, Inc., Hoffmann-LaRoche Group, Sanofi-Aventis, Inc., Takeda Pharmaceuticals, Teva, Inc., and Wyeth Laboratories, Inc. Other firms with the resources to acquire and exploit the rights are: Biogen-Idec, Inc., EMD-Serono, Inc., En-Vivo Pharmaceuticals, Inc., Eisai, Co., Inc., Immunogen, Inc., Ironwood Pharmaceuticals, Inc., Synta Pharmaceuticals, Inc., and Vertex Pharmaceuticals, Inc.

C. Regulatory Environment

Drug development is heavily regulated by the U.S. government, the states, and foreign jurisdictions. Of particular importance is regulation by the U.S. Food and Drug Administration (FDA), from which we need approval to conduct human clinical trials via Investigational New Drug (IND) applications.

(1) Investigational New Drug (IND) Designation

The United States Food and Drug Administration's Investigational New Drug (IND) program is the means by which a pharmaceutical developer obtains permission to ship an experimental drug across state lines for the purpose of human testing (usually to clinical investigators), well before a marketing application for the drug has been approved. The FDA reviews the IND application for safety to assure that research subjects will not be subjected to unreasonable risk. If the application is cleared, the candidate drug usually enters a Phase 1 clinical trial. An IND is required for a human clinical study if it is intended to support a new

indication, a change in the approved route of administration or dosage level, a change in the approved patient population (e.g. pediatric) or a population at greater or increase of risk (elderly, HIV positive, immuno-compromised), or a significant change in the promotion of an approved drug. The IND application must contain information in three broad areas:

Animal Pharmacology and Toxicology Studies – Preclinical data to permit an assessment as to whether the product is reasonably safe for initial testing in humans. Also included are any previous experiences with the drug in humans (often foreign use).

Chemistry and Manufacturing Information – Information pertaining to the chemical composition, manufacturing methods, stability, and controls used for manufacturing the drug substance and the drug product. The chemical stability and activity of the product must also have been tested. This information is assessed to ensure that GLSynthesis can adequately produce and supply consistent and active batches of the drug.

Clinical Protocol and Investigator Information – A detailed protocol for proposed clinical studies to assess whether the trial will expose the subjects to unnecessary risks. Information on the qualifications of clinical investigators—professionals (generally physicians) who oversee the administration of the experimental compound—assess whether they are qualified to fulfill their clinical trial duties. Finally, commitments to obtain informed consent from the research subjects, to obtain review of the study by an institutional review board (IRB), and to adhere to the investigational new drug regulations are required.

An IND must also include an *Investigator's Brochure* which is a document intended to educate the clinical trial investigators about the significant facts about the trial drug they need to know to conduct their trial with the least hazard to the subjects or patients who will be enrolled.

At a minimum, GLSynthesis must have been granted an IND designation before it can reasonably hope to sell or license its intellectual property to third parties in the pharmaceutical industry. Recent discussions with pharmaceutical industry staffs indicate that, in addition to an IND designation, GLSynthesis should have satisfactorily completed two phases of human trials (thereby wringing out much of the technical risk) before the larger pharmaceutical companies will go forward.

(2) Phase 1 and 2 Clinical Trials

Developing new drugs involves four phases of clinical testing in humans, ranging from Phase 1 to Phase 4. (Phase 4 is simply launch of the drug if approved by FDA.) Phase 1 trials are the first stage of clinical testing and often involve drugs that have been tested extensively in the laboratory and on animals with encouraging results, but have not yet been given to humans.

Patients in Phase 1 trials are the first to try new drugs. They are generally healthy volunteers who evaluate the drug for safety and disposition. If the first group (or cohort) does not have any severe side effects, then a new cohort receives a higher dose of the same drug. The dose

increases until the trial investigators find the best dose for future testing. With each increasing dose, doctors test each patient to see if he or she is responding adversely to the treatment. If the doctors find that the treatment is safe, then it will advance to a Phase 2 trial.

The objectives of Phase 1 trials include:

- Understanding the side effects of new drugs
- Determining how the drug affects the patient adversely
- Measuring absorption and half-life of the drug

Phase 2 trials only enroll a small number of participants, usually 15 to 100 patients, harboring the disease in question. Some of these may have a condition that has not responded to standard treatments. Trial participants are divided into small cohorts. The first cohort receives a low dose of the new drug. Doctors may collect blood or urine samples to measure drug levels in the patients. Evidence of efficacy at non-toxic doses is sought.

In Phase 3 trials (not part of this Offering), the experimental treatment is given to a larger group of people (100-1000) to see if it is generally effective and to further evaluate its safety.

D. Timeline

After a financing, the GLS362E project staff plans to complete IND-enabling studies, finish the documentation, submit its IND application, and receive IND status within 6-8 months. Phase 1 and 2 human clinical trials, including data analysis and reports, will take several months thereafter to complete, the actual duration depending on set-up time, volunteer recruiting, etc. (By comparison, Phase 3 recruits and uses 1,000 or more patients and may take several years to complete.) Assuming the human trials are encouraging, the General Partner will begin discussions with potential acquirers. We have not estimated durations or timelines for other projects. The following is a Table depicting product development stages, financial requirements, and duration for the first and follow-up products:

Product Acronym	**Stage of Development**	**Financial Requirements**	**Duration**
GLS362E (#1)	IND Designation	$ 1,500,000	8 months
	Phase 1 Clinical Trial	3,500,000	18-24 months
	Phase 2 Clinical Trial	3,000,000	12-24 months
GLS375C related (#2)	Feasibility	500,000	12-14 months
GLS122E (#3)	Feasibility	500,000	12-14 months
GLS288E (#4)	Feasibility	500,000	12-14 months
Partnership administration		500,000	
	TOTAL	$10,000,000	

E. Management Organization

The Partnership is organized in the classic matrix way – each research project is managed by a Principal Investigator (PI) and supported by a small staff. Laboratories, test animal facilities, and administrative support offices are shared by all projects. The Chairman and CEO of GLSynthesis, Dr. George E. Wright, is a PI and the supervisor of all projects, and the chief administrator of the enterprise. His deputy (and successor) is his deputy V. P. Ivan B. Yanachkov, Ph. D. Resumes of key personnel of the General Partner are in Appendix D.

F. External Administrative and Scientific Advisors

The Partnership has retained the services of a management consultant affiliated with a national firm that provides CFO services to small and mid market companies. This consultant's primary area of focus for the Partnership has been to provide assistance in the development of financial projections, and he will continue to provide CFO services to the Partnership after financing. The Partnership also retains the services of a consultant specializing in business development.

Richard E. Ellison III, M.D., has been a valuable consultant and advisor on antibacterial drug development, Mary Sherman, Ph. D., is a consultant specializing in pharmaceutical industry matters, and Michael Silverman, M.D., F.A.C.P., is a consultant specializing in clinical trials. All three will continue to provide services to the Partnership.

G. Service Providers

Partnership counsel, accounting and other staff will be designated upon funding of the Partnership.

III. INVESTMENT REQUEST

As the General Partner, GLSynthesis is seeking an overall investment of $10 million from Limited Partners to focus on anti-infective drug discovery and development. The principals Wright and Yanachkov have committed a total of $16,500 toward the Partnership.

IV. USE OF FUNDS AND RETURNS TO INVESTORS

Most of the funds will be used to advance the C-diff project (#1), which will require approximately $8 million to complete studies through Phase 2 clinical trials in humans. A detailed estimate of C-diff-related costs is contained in Table 2 of Appendix C. The remainder of the overall investment will be used to support three additional projects - an antibacterial project focusing on GLS375C-related compounds (which may yield more than one candidate compound, #2), antiviral projects focusing on GLS122E or a prodrug (#3), which will also study the recently-published link between Herpes simplex recurrences and Altzheimer's Disease, and an anti-parasitic project (#4) targeted at malaria and focusing on GLS288E and related compounds. We assume that each project will cost about $500,000, and that an additional $500,000 will cover administrative costs and contingencies. Table 1 of Appendix C summarizes the expenses of the Partnership and potential returns to the Partnership for project #1.

The returns for project #1 expected are based on three licensing options and are summarized in Appendix B. The 1st option is to license the product and results following completion of the IND; the 2nd upon completion of phase 1 clinical trials; and the 3rd upon completion of phase 2 clinical trials. The magnitude of return increases as each subsequent option is exercized. After phase 2, at least $25 million in direct licensing fees are projected to be returned, and at least $36,000,000 is expected to be returned upon payment of a milestone and royalties over the life of the drug.

APPENDICES

APPENDIX A

Financial history and projections for the General Partner

FIVE-YEAR SUMMARY PROJECTIONS – GLSYNTHESIS INC. (GP)

(all numbers in $000's)		2011*	2012	2013 Est.	2014 Proj.	2015 Proj.	2016 Proj.	2017 Proj.	2018 Proj.
Revenue	Commodity Chemicals	1068	927	900	860	820	780	750	720
	Chemical Synthesis	397	329	300	290	280	270	260	250
	Grants	1344	1166	1200	1200	1200	1200	1200	1200
	All Other Revenues	655	568	550	550	550	550	550	550
	Total Revenue	3446	2990	2950	2900	2850	2800	2760	2720
Expenses	Cost of Sales								
	Payroll - GLS (scientists)	936	851	850	850	850	850	850	850
	Research Srvcs (Consultants)	625	430	400	370	350	330	310	290
	Chemicals	500	720	625	575	550	525	500	475
	Lab Supplies	124	78	70	75	75	75	75	75
	Inventory Adjustment	100	-120	0	0	0	0	0	0
	Total Cost of Sales	2285	1959	1945	1870	1825	1780	1735	1690
	Admin Expenses								
	Payroll - GL Officer/Admin	571	566	550	560	560	560	560	560
	Rent	272	252	250	250	250	250	250	250
	Professional fees	52	46	46	46	46	46	46	46
	Hazardous Waste Disposal	36	5	5	5	5	5	5	
	Tax/Licenses	70	20	25	25	25	25	25	25
	Telecoms	12	9	10	10	10	10	10	10
	Travel and Entertainment	29	20	20	20	20	20	20	20
	Repairs and Maintenance	21	18	20	20	20	20	20	20
	Office Expense/Postage	36	30	30	30	30	30	30	30
	Insurance	4	6	10	10	10	10	10	10
	All Other Expenses	12	16	12	15	15	15	15	15
	"Contingency"	0	0	0	0	0	0	0	0
	Total Admin Expenses	1115	985	978	991	991	991	991	991
	Total Expenses	3400	2944	2923	2861	2816	2771	2726	2681
	EBITDA	46	46	27	39	34	29	34	39
	Depreciation	35	30	30	30	30	30	30	30
	Taxable income	11	16	-3	9	4	-1	4	9
	Tax Expense	2	2	1	1	2	2	2	2
	Net income	9	14	-4	8	2	-3	2	7

*** The GLS FY ends on March 31.**

NOTE 1: **Numbers above do not include any credits to be received from the new Partnership.**

NOTE 2: **Reduction in revenues are based on changes in projected market conditions.**

APPENDIX B

Financial projections of the Partnership

Table 1. Partnership revenues, expenses and profits

Option #1 – project #1 sold at completion of IND

(all numbers in $000's)		2014	2015	2016	2017	2018	2019-2027	TOTAL 14 yrs
Revenue	Sale of License	3000	0	0	0	0	0	3000
	Milestone I	0	0	2000	0	0	0	2000
	Milestone II	0	0	0	3000	0	0	3000
	Royalties	0	0	0	0	2250	20250	22500
	Total Revenues	3000	0	2000	3000	2250	20250	30500
Expenses	Direct costs (see details, Table 2)	979	0	0	0	0	0	979
	Indirect cost (GLS expenses)	392	0	0	0	0	0	392
	Misc. contingency	129	0	0	0	0	0	129
	Partnership Expense (tax, legal, IP)	150	100	100	75	75	0	500
	Total Expenses	1650	100	100	75	75	0	2000
	Profit to LP	1350	-100	1900	2925	2175	20250	28500
	Profit share to GP (20%)	270	-	380	585	435	4050	5700
	Profit share to investors (80%)	1080	-	1520	2340	1740	16200	22880

Option #2 – project #1 sold at completion of Phase 1

(all numbers in $000's)		2014	2015	2016	2017	2018	2019-2027	TOTAL 14 yrs
Revenue	Sale of License	0	0	7500	0	0	0	7500
	Milestone I	0	0	0	4000	0	0	4000
	Milestone II	0	0	0	0	5000	0	5000
	Royalties	0	0	0	0	2250	20250	22500
	Total Revenues	0	0	7500	4000	7250	20250	39000
Expenses	Direct costs (see details, Table 2)	979	1250	1250	0	0	0	3479
	Indirect cost (gls expenses)	392	500	500	0	0	0	1392
	Misc. contingency	129	0	0	0	0	0	129
	Partnership Expense (tax, legal, IP)	150	100	100	75	75	0	500
	Total Expenses	1650	1850	1850	75	75	0	5500
	Profit (distribution to partners)	-1650	-1850	5650	3925	7175	20250	33500
	Profit share to GP (20%)	-	-	1130	785	1435	4050	7400
	Profit share to LP's (80%)	-	-	4520	3140	5740	16200	29600

Option #3 – project #1 sold at completion of Phase 2

(all numbers in $000's)		2014	2015	2016	2017	2018	2019-2027	TOTAL 14 yrs
Revenue	Sale of License	0	0	0	25000	0	0	25000
	Milestones	0	0	0	0	6000	0	6000
	Royalties	0	0	0	0	3000	27000	30000
	Total Revenues	0	0	0	25000	9000	27000	61000
Expenses	Direct costs (see details, Table 2)	979	1250	1250	1125	1125	0	5729

Indirect cost (GLS expenses)	**392**	**500**	**500**	**450**	**450**	**0**	**2292**
Misc. contingency	**129**	**0**	**0**	**0**	**0**	**0**	**129**
Partnership Expense (tax, legal, IP)	**150**	**100**	**100**	**75**	**75**	**0**	**500**
Total Expenses	**1650**	**1850**	**1850**	**1650**	**1650**	**0**	**8650**
Profit (distribution to partners)	**-1650**	**-1850**	**-1850**	**23350**	**7350**	**27000**	**52350**
Profit share to GP (20%)	**-**	**-**	**-**	**4670**	**1470**	**5400**	**10470**
Profit share to LP's (80%)	**-**	**-**	**-**	**18680**	**5880**	**21600**	**41880**

Table 2. Partnership use of funds for project #1					
Study	**Vendor**	**Description**	**Est. cost**	**Product/ Report**	**API needed (g)**
API	GLS Shanghai	Prep of 5 kg 362E + 5 kg 371B (int)	nc	(completed)	-
Formulation	Emerson Resources or equiv.	Powder in capsule preparation: 150, 300 and 600 mg and placebo	157,600	Drug product	ca. 2000
		Capsule stability studies	90,900	Analysis	(above)
Additional preclinical studies	BioReliance	*In vivo* rat micronucleus assay	41,000	Safety pharm.	?
	QPS	Bioanalysis of rat plasma Toxicokinetics of rat plasma	11500 9600	" "	- -
	Ricerca	ICH Stability for GMP Lot (full stability protocol)	65,980	Chem.	30
	MPI Res.	14 day tox in rats (PO) with recovery	183,200	Tox/pathol	350
		14 day tox in dogs (PO) with recovery	192,400		ca. 2000
	QPS	Rat plasma Bioanalysis & TK for 14-day Study	30,574	TK anal.	0.025
		Dog plasma Bioanalysis & TK for 14-day Study	32,950		0.025
Clinical trial planning	GLS and BioStrategics	Phase 1A and 1B planning	150,000	Phase 1 trial for IND	
IND	Consultant; Laureate Pharma	IND Preparation & Submission: Writing (*estimated cost*) Formatting/compilation/submission	18,000 17,500	IND	NA
		Total IND	**$979,204**		
		GLS G&A (40%)	**$391,682**		
Phase 1 clinical trials	GLS	GMP synthesis of 2-4 kg 362E* *from 371B (int)	100,000	API	2-4-kg
	UMMS	Phase 1 Study: toxicity of single and repeat doses in normal human volunteers	ca. 1.7M	Phase 1 results	ca.1800 g
	QPS	Assay validation in urine/feces	159,000	"	
		Sample bioanalysis	240,500	"	
	BioStrategics	Phase 1 management and data reduction	300,000	Phase 1 data	
		TOTAL Ph 1	**2,499,500**		
		GLS G&A (40%)	**999,800**		
Phase 2 clinical trials	Central Glass or PCI	GMP synthesis of GLS362E	210,000	API	?
	[CRO]	Phase 2 study: toxicity and efficacy in human patients	ca. 1.5M	Phase 2 results	
	QPS	Sample bioanalysis	240,500	"	
	BioStrategics or CRO	Phase 1 management and data reduction	300,000	Phase 2 data	
		TOTAL Ph 2	**$2,250,500**		
		GLS G&A (40%)	**900,200**		
		Total needed	**ca. $8.0 M**		

APPENDIX C

Summary of project #1

A novel synthetic antibacterial drug for *Clostridium difficile*-associated *infections* (CDI)

We have discovered potent and selective synthetic bactericidal compounds that inhibit multiple strains of the anaerobe *Clostridium difficile* (Cdiff) in culture, and that protect hamsters from Cdiff-associated diarrhea and colitis and death, including those from recurrent infections. The compounds are weak inhibitors of "good" intestinal anaerobic bacteria. Preclinical *in vitro* and *in vivo* studies, most under GLP, have been completed. The compounds of interest are readily synthesized, have low overall oral absorption, and are primarily excreted unchanged in the feces. The results suggest that oral dosing with our anti-clostridial compounds will afford protection against CDI by maintaining high intestinal concentrations with minimal systemic toxicity. The properties described above recommend these compounds as oral treatments for the intestinal infection caused by Cdiff. Given the increasing prevalence of CDI, largely as a result of antibiotic treatment, the need for new and selective antibacterials to treat this disease is growing. The recently approved GAIN (Generating Antibiotic Incentives Now) act of 2011 has stimulated the US FDA to designate *C. difficile* as a QIDP (Qualifying Infectious Disease Pathogen) qualifying for fast track review of clinical trial results and five years of regulatory exclusivity beyond the patent life.

Our drug will be targeted for oral administration to patients with idiopathic and antibiotic-dependent CDI. Incidence of CDI is on the rise in the United States, and Cdiff is the major identified infectious cause of nosocomial diarrhea, occurring mainly in patients to whom antibiotics had previously been given. Vancomycin and metronidazole are first-line therapies for treatment of severe and mild CDI, respectively, but there have been reports of treatment failure (resistance) and CDI recurrence after treatment with metronidazole, and the CDC has discouraged vancomycin for treatment of CDI in hospitals to minimize the risk of generating vancomycin-resistant enterococci and staphylococci. The recently approved macrocyclic RNA synthesis inhibitor fidaxomicin (Dificid®, Cubist), although expensive, may be superior to vancomycin with respect to recurrence rates. Various interventions are under study for CDI treatment, e.g. fecal transplants, antibacterial drugs and vaccines.

Our development candidate (DC, GLS362E) was selected from among potent inhibitors of Gram-positive bacterial DNA polymerases IIIC and IIIE (G.E. Wright, N.C. Brown, W.-C Xu *et al*., Bioorg. Med. Chem. Lett. 15, 729-732 (2005)) andthose with potent antibacterial activity *in vitro* (W-C. Xu, G.E. Wright, N.C. Brown, *et al*. Bioorg. Med. Chem. Lett. 21, 4197-4202 (2011). The DNA polymerase IIIC gene from Cdiff has been cloned and expressed by us, and the enzyme is highly sensitive to competitive inhibition by our compounds (A. Torti, A. Lossani, L. Savi, *et al*. Curr. Enz. Inh. 7, 147-153 (2011). The DC has shown consistent *in vitro* activity vs. clinical isolates of Cdiff, including examples of the virulent NAP1 strain, and *in vivo* efficacy and prevention of recurrences at twice daily doses of 6.25 mg/kg for 14 days in the Syrian Golden hamster model of CDAD (S. Dvoskin, W.-C. Xu, N.C. Brown, *et al*. Antimicr. Agents Chemother. 56, 1624-1626 (2012). GLS362E was superior to vancomycin at twice daily doses of 10 mg/kg for 10 days in the same model. GLP preclinical toxicology studies, including dose range finding (DRF) and daily repeat dose (7 day) studies in rats and dogs, have shown maximum tolerated doses (MTD) of >1000 mg/kg in both species. Other preclinical studies (plasma extraction and analytical methods, ADME in vitro, metabolism and PK *in vivo*, genotoxicity and respiratory, cardiovascular and CNS safety studies) have been completed without major findings. The synthetic method is robust and can be readily scaled up; 5 kg of DC

and of a key intermediate are available. The DC is stable at 30 ºC and 65% RH for at least 12 months. Copies of scientific publications are available upon request.

A US patent assigned to GLSynthesis has been issued, claiming Gram+ antibacterial compounds, and US claims for the specific compounds that are active against Cdiff have been approved. International patent applications covering these claims (Europe, Canada, Japan) and a Provisional Patent Application covering selective synthesis of the DC are pending, and additional patent applications will be prepared as warranted.

This project and DC are available for investment through phase 2 clinical trials or for licensing or for inclusion as project #1 of the present offering.

APPENDIX D

Resumes of key employees, consultants and Board members

George E. Wright, Ph.D., Chief Executive Officer and Board Chairman, GLSynthesis, Principal of the Partnership

At the University of Massachusetts Medical School Dr. Wright was granted tenure in 1976 and promoted to Professor in 1978, and he became the founding Dean of Graduate Studies at UMMS in 1979. Dr. Wright has published extensively in basic heterocyclic chemistry, and in synthesis of enzyme inhibitors and design of antibiotic, antiviral and other antiinfective drugs. He has received numerous NIH grants, and has held sabbatical appointments as Professor of Experimental Physics, University of Warsaw (1980-81) and Senior International Fellow of the Fogarty Center, NIH, at the Max Planck Institute for Medical Research, Heidelberg, Germany (1989-90). He retired from his tenured faculty position in March, 1998, but retains affiliate appointments as Professor of Biochemistry and Molecular Pharmacology at UMMS and as Professor of Chemistry at Clark University, Worcester, MA.

Education:

B.S. (Pharmacy), University of Illinois, Chicago, l963
Ph. D. (Pharmaceutical Chemistry), University of Illinois, Chicago, l967

Employment History:

l966-68 Senior Research Assistant, Department of Chemistry, University of Durham, England
l968-74 Assistant Professor of Medicinal Chemistry, University of Maryland School of Pharmacy, Baltimore, MD
l974-79 Associate Professor of Pharmacology, University of Massachusetts Medical School, Worcester, MA
l976-79 Affiliate Associate Professor, Department of Chemistry, Clark University, Worcester, MA
1978-80 Acting Associate Dean for Graduate Studies, University of Massachusetts Medical School, Worcester, MA.
1979-98 Professor of Pharmacology, University of Massachusetts Medical School, Worcester, MA
1979-present Affiliate Professor, Department of Chemistry, Clark University, Worcester, MA
1992-95 Deputy Interim Chairman, Department of Pharmacology, University of Massachusetts Medical School, Worcester, MA
1980-84 Dean of Graduate Studies, University of Massachusetts Medical School, Worcester, MA
1980-81 Visiting Professor, Institute of Experimental Physics, University of Warsaw, Warsaw, Poland
1988-89 Fogarty Senior International Fellow, Department of Biophysics, Max Planck Institute for Medical Research, Heidelberg, Germany
1996-present CEO, GLSynthesis, Worcester, MA
1998-present Professor of Biochemistry and Molecular Pharmacology (Affiliate), University of Massachusetts Medical School, Worcester, MA
2010-present Member, Board of Trustees, Massachusetts Biomedical Initiatives
2010-present Member, Industry Advisory Board, Department of Chemistry, Worcester State University

Research Interests: Medicinal chemistry and drug design. Antibacterial and antiviral drugs.

Representative Publications (from a total of ca. 120):

Z. Kazimierczuk, J. Vilpo, C. Hildebrand and G. Wright, "Synthesis and Cytotoxicity of Deoxyadenosine Analogs: Isomer Distribution in the Sodium Salt Glycosylation of 2,6-Disubstituted Purines", J. Med Chem., 33, 1683-1687 (1990).

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H.E. Kaufman, E.D. Varnell, G.E. Wright, H. Xu, B.M. Gebhardt and H.W. Thompson, "Effect of 9-(4-hydroxybutyl)-N^2-phenylguanine (HBPG), a thymidine kinase inhibitor, on clinical recurrences of ocular herpetic keratitis in squirrel monkeys," Antiviral Res., 33, 65-72 (1996).

J.M. Stattel, I. Yanachkov and G.E. Wright, "Synthesis and Biochemical Study of N^2-(p-n-Butylphenyl)-2'-deoxyguanosine 5'-(α,β-Imido) triphosphate (BuPdGMPNHPP): A Non-substrate Inhibitor of B Family DNA Polymerases," Nucleosides Nucleotides, 17, 1505-1513 (1998).

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A. Manikowski, A. Verri, A. Lossani, B.M. Gebhardt, J. Gambino, F. Focher, S. Spadari, and G.E. Wright. Inhibition of Herpes Simplex Virus Thymidine Kinases by 2-Phenylamino-6-oxopurines and Related Compounds: Structure-activity Relationships and Antiherpetic Activity *In Vivo*. J. Med. Chem. 48, 3919-3929 (2005).

C. Zhi, Z.-Y. Long, A. Manikowski, N.C. Brown, P.M. Tarantino, Jr., K. Holm, E.J. Dix, G.E. Wright, K.A. Foster, M.M. Butler, W.A. LaMarr, D.J. Skow, I. Motorina, S. Lamothe, and R. Storer. Synthesis and Antibacterial Activity of 3-Substituted-6-(3-ethyl-4-methylanilino)uracils. J. Med. Chem., 49, 1455-1465 (2006).

M.M. Butler, W.A. LaMarr, K.A. Foster, M.H. Barnes, D.J. Skow, P.T. Lyden, C. Zhi, N.C. Brown, G.E. Wright and T.L. Bowlin. Antibacterial Activity and Mechanism of Action of a Novel Anilinouracil: Fluoroquinolone Hybrid Compound. Amtimicrob. Agents Chemother. 51, 119-127 (2007).

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Ivan B. Yanachkov, Ph.D., Vice President and Director of Quality Control, GLSynthesis, Assistant Principal of the Limited Partnership

Dr. Yanachkov received the M.S. and Ph.D. degrees from the University of Chemical Technology and Metallurgy, Sofia, Bulgaria, in 1980 and 1987, respectively. He received the Ph.D. in Chemistry from Clark University, Worcester, MA in 1996. Following a period as Postdoctoral Fellow at the University of Massachusetts Medical School, Worcester, he joined Drug Innovation and Design, Waltham, MA, as Senior Scientist in 1996. After a brief stay at Paratek Pharmaceuticals, Boston, he joined GLSynthesis in Worcester, MA, as Senior Scientist. Dr. Yanachkov is an accomplished medicinal chemist, focusing on nucleosides, nucleotides and related compounds. In addition, he assists in design and implementation of analytical protocols, and is Director of Quality Control at GLSynthesis He has spearheaded antithrombotic drug synthesis and purification and has interacted with preclinical and clinical consultants in this NIH-funded project.

Education:

Univ. of Chemical Technology and Metallurgy, Sofia,	M.S.	1975-1980	Chemistry
Univ. of Chemical Technology and Metallurgy, Sofia,	Ph.D.	1984-1987	Org. Chemistry
Clark University, Worcester, MA	Ph.D.	1992-1996	Pharmacology,

Employment History:

1995-1996	Postdoctoral in biochemistry, Univ. of Massachusetts medical School, Worcester, MA
1996–2001	Senior Scientist, Drug Innovation and Design, Inc., Brandeis Univ., Waltham, MA.
2001-2001	Senior Scientist, Paratek Pharmaceuticals, Inc., Boston, MA
2002-pres.	Senior Scientist, GLSynthesis, Worcester, MA
2013-pres.	Vice President, GLSynthesis, Worcester, MA

Publications:

Dimov N., Agapova, N., Levi, Sh., Yanachkov, Iv., Separation of nitrate esters and nitrate-acetate esters of isosorbide, *J. Chromatogr*., *285*, 515-517 (1984).

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Glazier, A.; Yanachkova, M.; Yanachkov, I.: US 6,180,790 1/30/2001: "Methods of preparing acyclovir produrgs".

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Yanachkov I; Wright, G.E. US 8,288,545 10-16-2012: "Reactive Pyrophosphoric and bis-phosphonic acod Derivatives and Methods of their use"

Yanachkov, I.; Wright, G.E.: US 8,525,122 11-5-13: "Novel Antithrombotic Diadenosine Tetraphosphate Analogs" (PCT pending in Europe and Canada)

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Dr. Chen received his B.S. in Analytical Chemistry from the University of Science and Technology of China, Hefei, in 1982. He received both his M.S. (1984) and Ph.D. (1986) in Organic Chemistry from the Shanghai Institute of Organic Chemistry, Shanghai, China. Dr. Chen was an Alexander von Humboldt Fellow at the University of Bonn in 1988-89, and was a Research Associate in Chemistry at the State University of New York at Stony Brook from 1990-91. After an appointment as Senior Research Chemist in the chemical industry from 1992-96, Dr. Chen became a founder and President and Director of Chemistry of GLSynthesis Dr. Chen's specialties are design and performance of multistep syntheses of compounds of pharmaceutical interest.
Education:

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Univ. of Science & Tech., of China, Hefei	B.S.	1982	Analytical Chemistry
Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences	M.S.	1984	Organic Chemistry
Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences	Ph.D.	1986	Organic Chemistry

Employment history:

1988-89	Humboldt Fellow, University of Bonn, Germany
1990-91	Postdoctoral Fellow, State University of New York, Stony Brook, NY
1992-1996	Senior Research Chemist, Albany Molecular Research Inc., Albany, NY
1996-present	Co-Founder, President, Director of Chemistry, GLSynthesis, Worcester, MA

Publications:
W.Y. Huang, B.N. Huang and J.L. Chen, A New Reaction of Carbon Tetrachloride and 1,1,1-Trichloropolyfluoroalkanes, Acta Chim. Sin. 42, 1114 (1984).

W.Y. Huang, J.L. Chen and L.Q. Hu, Reactions of Perfluoroalkanesulfonyl Bromide, Bull. Soc. Chim. France, 881 (1986).

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W.Y. Huang, B.N. Huang and J.L. Chen, Sulfinatodehalogenation of $RCCl_3$-Type Compounds, Acta Chim. Sin. 42, 45 (1986).

W.Y. Huang and J.L. Chen, Reactions of Perfluoro- and 2,2-Dichloropolyfluoroalkanesulfinates, ActaChim. Sin. 45, 445 (1987).

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Patents:

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A.K.G. Aberg, J.L. Chen, G.E. Wright and A.Maioli, Optically Active Isomers of Ketotifen and Therapeutically Active Metabolites Thereof, U.S. Patent 7,226,934, issued June 5, 2007

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Dr, Xu received the B.S. in chemistry from Suzhou University and the M.S. And Ph.D. degrees in Organic Chemistry from the Shanghai Institute of Organic Chemistry, both in China. After postdoctoral research with Nobel laureate H.C. Brown and then with an investigator in antitumor drug design at Purdue University, he joined GLSynthesis in 2000. In addition to accomplishing numerous multistep organic syntheses for customers, he has spearheaded drug discovery and synthesis projects involving antiviral and antibacterial drugs. He completed the first cGMP project at GLSynthesis involving a synthetic antibacterial drug, and he acts as Head of Production in our cGMP laboratory. He is the PI of a current phase I SBIR grant, and acts as manager of Yancheng GLPharma Co. Ltd., in Yancheng, China.
Education:

Suzhou University, Suzhou, China	B.S.	1989	Chemistry
Shanghai Inst. of Organic Chemistry, China	M.S.	1992	Organic Chemistry
Shanghai Inst. of Organic Chemistry, China	Ph.D.	1995	Organic Chemistry

Employment history:

1995-1996	Postdoctoral in chemistry, Purdue University, Lafayette, IN (with Nobel Laureate H.C. Brown)
1996-1999	Postdoctoral in medicinal chemistry, Purdue University, Lafayette IN
2000-2001	Staff Scientist, GLSynthesis, Worcester, MA
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Publications:

G.-Q. Lin, W.-C. Xu. Enantioselective Synthesis of All Four Stereoisomers of (2*E*, 4*E*)-4,6,10,12-Tetramethyl-2,4-trideca dien-7-one, the Sex Pheromone of *Matsucoccus* Pine Bast Scale, *Tetrahedron Lett*., *34*, 5931 (1993).

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Patents:

U.S. Patent 6,926,763, issued August 9, 2005, Purine and Isosteric Antibacterial Compounds, Inventors: George E. Wright, Wei-Chu Xu and Neal C. Brown.

International Patent Application PCT/US2010/048379, filed 9-10-10, Title: Selective Antibacterials for Clostridium difficile Infections, Inventors: George E. Wright and Wei-Chu Xu. (to US, Japan, Canada and Europe)

Consultants

Richard T. Ellison III, M.D., clinical infectious disease consultant, has been involvedin clinical practice in the field of Infectious Diseases as well as in both basic science and clinical research in this field. He has served as the principal investigator on a phase III clinical trial comparing the use of pyrimethamine/sulfadoxine and aerosolized pentamidine for prevention of *Pneumocystis* pneumonia early in the AIDS epidemic, and local P.I. for a phase III clinical trial of *Klebsiella* and *Pseudomonas aeruginosa* hyperimmune globulin to prevent gram-negative sepsis in intensive care unit patients,and P.I. of a substudy that concurrently assessed the role of *Helicobacter pylori* in stress gastritis. More recent work has been devoted to healthcare epidemiology, with a focus on prevention of healthcare associated infections, as well as on efforts to prevent infections and the potential impact of preventive measures on patient safety. He oversees the Infection Control department at UMass Memorial Medical Center and served as co-chair of a Massachusetts Department of Public Health expert panel that provided recommendations on appropriate infection control practices for all acute care hospitals in Massachusetts. Overall, he has had extensive first-hand experience designing and implementing clinical and basic science studies in infectious diseases.

Education:

University of Virginia, Charlottesville, VA	B.A.	1973	Chemistry & Religious studies
Hahnemann Medical College, Philadelphia, PA	M.D.	1977	Medicine
Rhode Island Hospital, Providence, RI	Resident	1980	Internal Medicine
Veterans Administration Medical Center, Providence, RI	Chief Resident	1981	Internal Medicine
University Colorado Health Sciences Center, Denver, CO	Fellowship	1983	Infectious Diseases

Employment History:

1983-1985	Associate Investigator, Veterans Administration Medical Center, Denver, CO
1984-1990	Assistant Professor of Medicine, University of Colorado School of Medicine, Denver, CO
1989-1991	Research Associate, Department of Veterans Affairs Medical Center, Denver, CO
1990-1991	Associate Professor of Medicine, University of Colorado School of Medicine, Denver, CO
1991-1998	Clinical Director, Division of Infectious Diseases and Immunology, University of Massachusetts Medical School, Worcester, MA
1991-1996	Associate Professor of Medicine, University of Massachusetts Medical School, Worcester, MA
1996-2008	Professor of Medicine, Molecular Genetics and Microbiology, University of Massachusetts Medical School, Worcester, MA
1998-2000	Associate Director, Division of Infectious Diseases and Immunology, UMass Memorial Healthcare, Worcester, MA
2002-present	Hospital Epidemiologist, UMass Memorial Medical Center, Worcester, MA
2009-2013	Professor of Medicine, Microbiology & Physiological Systems, University of Massachusetts Medical School, Worcester, MA

Honors: Fellow, American College of Physicians; Fellow, Infectious Disease Society of America; Western Society of Clinical Investigation; Fellow, Society for Healthcare Epidemiology of America; President, Massachusetts Infectious Disease Society 1998-2001; Chair, Massachusetts Department of Public Health Betsy Lehmann Center Hospital Acquired Infection Expert Panel 2006-2008

Publications:

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Donta ST, Peduzzi P, Cross AS, Sadoff J, Haakenson C, Cryz SJ Jr, Kauffman C, Bradley S, Gafford G, Elliston D, Beam TR Jr, John JF Jr, Ribner B, Cantey R, Welsh CH, Ellison RT III, Young EJ, Hamill RJ, Leaf H, Schein RMH, Mulligan M, Johnson C, Abrutyn E, Griffiss JM, Hamadeh R, Eliasson AH, McClain JB, Melcher GP, Kelly JW, Byrne WR, Wallace M, Amundson D, Gumpert B, Slagle, the Federal Hyperimuune Immunoglobulin Therapy Study Group. Immunoprophylaxis against *Klebsiella* and *Pseudomonas aeruginosa* infections. J Infect Dis 174:537-543 (1996).

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Yu C, Baker S, Morse LJ, Gardiner J, Meehan M, Esposito A, Roberto R, Ellison RT III. Clinical and laboratory findings in individuals with acute norwalk virus gastroenteritis. Arch Int Med 167:1903-1905 (2007).

Manuell M-E, Co MD, Ellison RT III. Pandemic influenza: implications for preparation and delivery of critical care services. J Intensive Care Med 26:347-367 (2011).

Wang D, Rundensteiner E, Ellison RT III, Wang H. Active Complex Event Processing infrastructure: Monitoring and reacting to event streams. Data Engineering Workshops (ICDEW), IEEE 249-254 (2011).

Mary M. Sherman, Ph.D., regulatory consultant, is a **v**ersatile management professional and technically proficient research scientist with experience in Discovery Research through Pre-Clinical Development for Fortune 500 pharmaceutical companies and contract research organizations (CROs). She is well-versed in accelerated ADME-T in support of Drug Discovery, physical pharmacy, formulations, absorption and pharmacokinetics. Areas of experience and expertise include drug discovery (lead optimization to lead selection), DMPK, analytical chemistry and preformulations, and general toxicology. As the Principal for Preclinical and Regulatory Consulting, she provides guidance in the design and management of IND-enabling programs including designing studies, sourcing appropriate bids, managing contract research organizations (CROs) to ensure that they effectively and accurately execute the studies, manage timelines/deadlines, and draft appropriate regulatory documentation.

Education:

University of Minnesota	B.S.	1977	Chemistry
University of Wisconsin	Ph.D.	1985	Biochemistry
University of Utah	-	1989	Postdoctoral

Employment history:

2010 - present	Principal, Preclinical and Regulatory Consulting
2006 - 2010	Principal, Aptuit Consulting Inc.
2004 - 2006	Director of DMPK/Analytical, Vertex Pharmaceuticals
2002 - 2004	Director of ADME, MPI Research
2001 - 2002	Associate Director of Analytical Chemistry, Pharmacopoeia Inc.
1992 - 2001	Senior Research Scientist II, Wyeth Research
1989 - 1991	Senior Research Biochemist, Merck-Frosst Canada

Publications:

Henderson, Ian, Guo, Joan, Dillard, Lawrence W., Sherman, Mary M., Dolle, Roland E. High throughput analysis of combination libraries encoded with electrophoric molecular tags. High Throughput Analysis for Early Drug Discovery (2004), 1-36. Editor: Kyranos, James N. Publisher: Elsevier, San Diego, CA.

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Sherman, M. M., Yue, S., Hutchinson, C. R. Biosynthesis of Lasalocid A. Metabolic Interrelationships of Carboxylic Acid Precursors and Polyether Antibiotics. J. Antibiotics, 39, 1135-1143, 1986.

Sherman, M. M., Hutchinson, C. R. Polyether Antiobiotic Biosynthesis: The Biochemical Mechanisms for Assembly of the Carbon Skeleton of Lasalocid A. Stereochemistry of Enzymatic Reactions, Proceedings of the Fifteenth Steenbock Symposium, July 1985.

Hutchinson, C. R., Sherman, M. M., Vederas, J. C., McInnes, A. G., Walter, J. C. Biosynthesis of Macrolide Antibiotics VI. The Mechanisms of Stereocontrol During the Formation of Lasalocid A. J. Am. Chem. Soc., 103, 5957-5959, 1981.

Michael Silverman, M.D., F.A.C.P., clinical trials consultant, is the principal consultant at BioStrategics Consulting Ltd, which provides a broad range of strategic and tactical consulting services for clients in the health care and life sciences industries. Dr. Silverman received the B.S. in biology from the University of Illinois and the M.D. from the University of Chicago. After internship and residency in internal medicine at the Universty of Iowa, Dr. Silverman was a fellow in rheumatology at the University of Colorado, He utilizes his expertise in the pharmaceutical development process to manage strategy consulting engagements with pharmaceutical, biotechnology, medical device, and clinical research-oriented companies, and contributes to a variety of due diligence, transactions, and strategic partnership activities. He also utilizes his background in clinical medicine to provide consulting services to hospitals, physician organizations, and other health care provider entities.

Education:

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Illinois	BS	June 1969	Biology
University of Chicago	MD	June 1973	Medicine
University of Iowa, Iowa City, Iowa	Intern	June 1974	Internal Medicine
University of Iowa, Medicine	Resident	June 1976	Internal Medicine
University of Colorado Medical Center	Fellow	June 1978	Rheumatology

Employment history:

President, BioStrategics Consulting Ltd., Marblehead, MA, January 1999-present

Manager, Health Care/Life Sciences Consulting, KPMG Peat Marwick LLP, Boston, MA, May 1997 - December 1998

Vice President, Clinical Research, Biopure Corporation, Cambridge, MA, May 1995 - May 1997

Executive Director, Clinical Research, Telor Ophthalmic Pharmaceuticals, Woburn, MA, July 1993 - May 1995

Director, Clinical Research, Sandoz Research Institute, East Hanover, NJ, July 1989 - July 1993

Clinical Project Director, Sterling-Winthrop Research Institute, Rensselaer, NY, January 1986 - June 1989:

Private practice of rheumatology, Portland OR and Palm Springs CA, 1978-1985

Certifications and licensure:

Certifications: Subspecialty Certification in Rheumatology, 1978
American Board of Internal Medicine, 1976

Licensure: New Jersey (MA53834)
New York (165291-1)
Illinois (036-070273)
Massachusetts (78382)

Publications:

Kovalchik, M.T., Guggenheim, S.J., Silverman, M.H., Robertson, J.S., Steigerwald, J.C. The kidney in progressive systemic sclerosis -- a prospective study. Ann Int Med. 1978; 89:881-887.A

Silverman, M., Lubeck, M.J., Briney, W.C. Central retinal vein occlusion complicating systemic lupus erythematosus. Arthritis Rheum. 1979; 21:839-843.

Silverman, M.H. Polyarteritis nodosa complicating ulcerative colitis. J. Rheumatology 1984; 11:337-379.
Cook, J.A., Silverman, M.H., Schelling, D.J., Nix, D.E., Schentag, J.J., Brown, R.R. and Stroshane, R.M. Multiple dose pharmacokinetics and safety of oral amifloxacin in healthy volunteers. Antimicrob Agents Chemother. 1990; 34:974-979.

Stroshane, R.M., Silverman, M.H., Sauerschell, R., Brown, R.R., Boddy, A.W. and Cook, J.A. Preliminary study of the pharmacokinetics of oral amifloxacin in elderly subjects. Antimicrob Agents Chemother. 1990; 34:751-754.

Boyko, E.J., Iravani, A., Silverman, M.H., Schelling, D.J. and the Amifloxacin Multi-Center Trial Group. A randomized controlled trial of a 10 day course of amifloxacin versus trimethoprim-sulfamethoxazole in the treatment of acute, uncomplicated urinary tract infection. Antimicrob Agents Chemother. 1990; 34:665-667.

Solch, S., Nadler, P.I. and Silverman, M.H. Safety and tolerability of 2% cyclosporine ophthalmic ointment (Sandimmune®) in normal volunteers. J Ocular Pharmacol. 1991; 7:301-312.

Laibovitz, R., Solch, S., Andriano, K., O'Connell, M. and Silverman, M.H. Pilot trial of cyclosporine 1% ophthalmic ointment in keratoconjunctivitis sicca. Cornea 1993; 12:315-323.

Silverman MH, Hedley ML, Petry KU, and Weber JS. Clinical trials in cervical intraepithelial neoplasia: Balancing the need for efficacy data with patient safety. J Lower Genit Tract Dis 2002; 6:206-211.

Ujhelyi M, Hoyt RH, Burns K, Fishman RF, Musley S, and Silverman MH. Nitrous oxide sedation reduces discomfort caused by atrial defibrillation shocks. Pacing Clin Electrophysiol 2004; 27:485-491.

Garcia F, Petry KU, Mudersapch L, Gold MA, Braly P, Crum CP, Magill M, Silverman M, Urban RG, Hedley ML, and Beach KJ. ZYC101a for treatment of high-grade cervical intraepithelial neoplasia: a randomized controlled trial. Obstet Gynecol 2004; 103:317-326.

Van Troostenburg AR, Lee D, Jones TR, Dyck-Jones JA, Silverman MH, Lam GN, Warrington SJ. Safety, tolerability, and pharmacokinetics of subcutaneous Å6, an 8-amino acid peptide with anti-angiogenic properties, in healthy men. Int J Clin Pharmacol Ther 2004; 42:253-259.

Van Troostenburg A-R, Clark EV, Carey WDH, Warrington SJ, Kerns WD, Cohn I, Silverman MH, Bar-Yehuda S, Fong K-LL, Fishman P. Tolerability, pharmacokinetics, and concentration-dependent hemodynamic effects of oral CF101, an A3 adenosine receptor agonist, in healthy young men. Int J Clin Pharmacol Ther 2004; 42:534-542.

Berkenblit A, Matulonis UA, Kroener JF, Dezube BJ, Lam GN, Cuasay LC, Brünner N, Jones TR, Silverman MH, Gold MA. Å6, a urokinase plasminogen activator (uPA)-derived peptide in patients with advanced gynecologic cancer: A phase I trial. Gynecol Oncol 2005; 99:50-57.

SCT Working Group on Data Monitoring: Dixon DO, Freedman RS, Herson J, Hughes M, Kim KM, Silverman MH, Tangen CM. Guidelines for data and safety monitoring for clinical trials not requiring traditional data monitoring committees. Clin Trials 2006; 3:314-319.

Silverman MH, Strand V, Markovits D, Nahir M, Reitblat T, Molad Y, et al. Clinical evidence for utilization of the A_3 adenosine receptor as a target to treat rheumatoid arthritis: data from a Phase II clinical trial. J Rheumatol 2008; 35:41-48.

Ghamande SA, Silverman MH. Huh W, Behbakht K, Ball G, Cuasay L, Würtz SO, Brunner M, and Gold MA. A Phase 2, randomized, double-blind, placebo-controlled trial of clinical activity and safety of subcutaneous Å6 in women with asymptomatic CA125 progression after first-line chemotherapy of epithelial ovarian cancer**.** Gynecol Oncol 2008; 111:89-94.

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Pardanani A, Gotlib JR, Jamieson C, Cortes J, Talpaz M, Stone RM, Silverman MH, Gilliland DG, Shorr J, Tefferi A. Safety and efficacy of TG101348, a selective JAK2 inhibitor, in myelofibrosis. J Clin Oncol 2011; 29:789-796.

Blom P, Silverman MH, Fishman RS, Jakobsson J. Nitrous oxide self-administered from a demand valve for 4-minute period: Dose-effect on attention, mode and wakefulness. J Anesthes Clinic Res 2011; 2:126-129. doi:10.4172/2155-6148.1000126.

David M, Akerman L, Ziv M, Kadurina M, Gospodinov D, Pavlotsky F, Yankova R, Kouzeva V, Ramon M, Silverman MH, Fishman P. Treatment of plaque-type psoriasis with oral CF101: data from an exploratory randomized phase 2 clinical trial. J Eur Acad Dermatol Venereol. 2011 Apr 20. doi: 10.1111/j.1468-3083.2011.04078.x.

Ball G, Piller LB, Silverman MH. Continuous safety monitoring for randomized controlled clinical trials with blinded treatment information Part 1: Ethical considerations. Contemp Clin Trials 2011; 32:S2-4; doi:10.1016/j.cct.2011.05.010.

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Stemmer SM, Benjaminov O, Medalia G, Ciuraru NB, Silverman MH, Bar-Yehuda S, Fishman S, Harpaz Z, Farbstein M, Cohen S, Patoka R, Singer R, Kerns WD, Fishman P. CF102 for the treatment of hepatocellular carcinoma: A Phase I/II, open-label, dose-escalation study. The Oncologist 2013; 18:25-26.

Mark M. Turnbull, Ph.D., is Professor of Chemistry (endowed chair) at Clark University, 950 Main St., Worcester, MA, and was recently appointed to the Board of Directors of GLSynthesis Dr. Turnbull is a prolific investigator in metalloorganic chemistry and has been Chairman of the Department of Chemistry at Clark. He was a Visiting Professor at the University of Barcelona and was a visiting researcher at the University of Canterbury, New Zealand.

Education:

Ph.D. in Organic Chemistry, Brandeis University, 1987.

M.S. in Inorganic Chemistry, University of New Hampshire, 1984.

B.S. in Chemistry, University of New Hampshire, 1978.

Employment history:

Carl J. and Anna (Kranz) Carlson Endowed Chair in Chemistry, 2013-present.

Professor, Carlson School of Chemistry and Biochemistry, Clark University, 2000-present

Profesor Visitante, Departamento de Química Física, Facultad de Química, Universitat de Barcelona, 2001-2002

Iberdrola Fellow, Universitat de Barcelona, 2001-2002.

Chairman, Carlson School of Chemistry and Biochemistry, 1999-2001, 2003-9.

Associate Professor of Chemistry, Clark University, 1993-1999.

Visiting Lecturer, University of Canterbury, Christchu¬rch, New Zealand, 1995 and Fall 2012.

Assistant Professor of Chemistry, Clark University; Sept. 1986 1992.

Chemistry and Physics Teacher, Londonderry High School, Londonderry, N.H., 1978 1982.

Honors and Awards

Clark University Senior Faculty Fellow – 2005-6

Siemens Outstanding Mentor – 2004-5

Pratt Diniak Award For Excellence In Teaching, University of New Hampshire, 1983 and 1984.

Teacher of the Year Londonderry High School 1980 81.

Professional Service

Editorial Board – Journal of Coordination Chemistry – 2003-present
European Chemical Journal – 2012-present

Treasurer, Central Massachusetts Section, ACS – 2012-present

Secretary/Treasurer, Central Massachusetts Section, ACS – 2011

Member-at-Large, Executive Board, Central Massachusetts Section, ACS , 2008-2010

Current Research Interests: molecular magnetic materials and preparation and reactivity of transition metal phosphine complexes with novel structures.

Recent publications (of ca. 192):

Coffey, T.J.; Landee, C.P.; Robinson, W.T.; Turnbull, M.M.; Winn ,M.; Woodward, F.M. Inorg. Chim. Acta 2000, 303, 54-60. "Transition Metal Halide Salts of 2-Amino-3-methylpyridine: Synthesis, Crystal Structures and Magnetic Properties of (3-MAP)2CuX4 [3-MAP = 2-amino-3-methylpyridinium; X = Cl, Br] Landee, C.P.; Turnbull, M.M.; Galeriu, C.; Giantsidis, J.; Woodward, F.M. Phys. Rev. B, Rapid Commun. 2001, 63, 100402R. "Magnetic properties of a new molecular-based spin-ladder system: (5-IAP)2CuBr4• 2H2O"

Li, H.-J.; Castro, A.; Turnbull, M. M. J. Organomet. Chem. 2001, 630, 33-43. "Chemical Shift Effects in the 13C-NMR Spectra of [(C5H5)(CO)2Fe(II)]-substituted Cyclohexanes, Dioxanes and Tetrahydropyrans"

Masaki, M.E.; Turnbull, M.M. Heterocycles 2002, 57, 47-54. "Lewis Acid Catalyzed Dimerization of 2-Aminopyrimidine: Synthesis and X-ray structure"
Glynn, C.W.; Turnbull, M.M. Trans. Met. Chem.2002, 27, 822-31. "Transition metal complexes of 2,6-diacetylpyridine dioxime (dapdoH2): Crystal structures of [M(dapdoH2)2](ClO4)2 [M = Cu, Mn]"

Zhang, W.; Bruda, S.; Landee, C.P.; Parent, J.L.; Turnbull, M.M. Inorg. Chim. Acta. 2003, 342, 193-201. "Structures and Magnetic Properties of Transition Metal Complexes of 1,3,5-Benzenetricarboxylic Acid"

Stone, M.B.; Reich, D.H.; Broholm, C.; Lefmann, K.; Rischel, C.; Landee, C.P.; Turnbull, M.M., Phys. Rev. Lett. 2003. 91, 037205. "Extended quantum critical phase in a magnetized spin-1/2 antiferromagnetic chain"

Anagnostis, J.; Turnbull, M.M. Polyhedron 2004, 25, 125-133. "Rotational Barriers in Dialkylaminochlorophosphines: Methyl substituted piperidinochlorophenyl-phosphines"

Deumal, M.; Giorgi, G.; Robb, M.A.; Turnbull, M.M.; Landee, C.P.; Novoa, J.J. Euro. J. Inorg. Chem. 2005, 4697-4706 (cover article). "The mechanism of magnetic interaction in spin-ladder molecular magnets: A first principles bottom-up theoretical study of the magnetism in the two-leg spin-ladder bis(2-amino-5-nitropyridinium) tetrabromocuprate monohydrate"

Bruda, S.; Turnbull, M.M.; Landee, C.P.; Xu, Q. Inorg. Chim. Acta, 2006, 359, 298-308. "Synthesis, Structures and Magnetic Properties of 2-Aminomethylpyridine-Ni(II) Complexes"

Li, L., Turnbull, M.M.; Landee, C.P.; Twamley, B. J. Coord. Chem. 2006, 59,1311-20. (cover article) " Synthesis, crystal structure and properties of bis(hexafluoroacetylacetonato) tetrazinecopper(II)"

Landry, B.R.; Turnbull, M.M. J. Chem. Cryst. 2007, 37, 81-86. "Synthesis and Structure of a Novel Copper (II) Nitrate Complex of 2,4-dioxo-4-phenylbutanoic acid"

Sologubenko, A.V.; Berggold, K.; Lorenz, T.; Rosch, A.; Shimshoni, E.; Phillips, M.D.; Turnbull, M.M. Phys. Rev. Lett. 2007, 98, 107201. "Magnetothermal transport in the spin ½ chains of copper pyrazine dinitrate"

Parent, A.R.; Vedachalam, S.; Landee, C.P.; Turnbull, M.M. J. Coord. Chem. 2008, 61, 93-108. (cover article) "Syntheses, Crystal Structures and Magnetic Properties of Heteronuclear Bimetallic Compounds of [Cu(pdc)2][M(H2O)5]•2H2O [M = Ni(II), Co(II), Mn(II); pdc = 2,6-pyridinedicarboxylato]"

Butcher, R.T.; Turnbull, M.M.; Landee, C.P.; Wells, B.M.; Novoa, J.J.; Ribas-Ariño, J.; Sandvik, A.W.; Awwadi, F.F. Chem Commun. 2009, 1359-61. "Through-space Two-halide Magnetic Exchange of 2J = -234(1) K in (2,5-Dimethylpyrazine)copper(II) Bromide"

Li, L.; Turnbull, M.M.; Ackers, J.; Chen, J.; Lin, H.; Pan, B.; Wang, H.; Foxman, B.M. Inorg. Chim. Acta 2009, 362, 3845-52. "Copper(II) complexes of 3-amino-1,2,4-triazine and 2-aminopyrazine: Strategies for designing crystalline materials using coordination polymers"

Tsyrulin, N.; Xiao, F.; Schneidewind, A.; Link, P.; Rønnow, H.M.; Gavilano, J.; Landee, C.P.; Turnbull, M.M.; Kenzelmann, M. Phys. Rev. B 2010, 81, 134409/1-9. "The two-dimensional square-lattice S=1/2 antiferromagnet Cu(pz)2(ClO4)2"

Carnevale, D.J.; Landee, C.P.; Turnbull, M.M.; Winn, M.; Xiao, F. J. Coord. Chem. 2010, 63, 2223-38. "Co(II) halide complexes with 2-amino-3-methylpyridinium and 2-amino-5-methylpyridinium: Synthesis, Crystal Structures and Magnetic Properties"

Ludy, S.J.; Landee, C.P.; Turnbull, M.M.; Wikaira, J.L. J. Coord. Chem. 2011, 64, 134-44. "Synthesis, Structure and Magnetic Behavior of a Pyrazine-bridged Cu(II)/Au(CN)2 Complex"

Ninios, K.; Hong, T.; Manabe, T.; Hotta, C.; Herringer, S.N.; Turnbull, M.M.; Landee, C.P.; Takano, Y.; Chan, H.B. Phys. Rev. Lett., 2012, 108, 097201.1-5. "Wilson ratio of a Tomonaga-Luttinger liquid in a spin-1/2 Heisenberg Ladder"

Abdalrahman, M.; Landee, C.P.; Telfer, S.; Turnbull, M.M.; Wikaira, J.L. Inorg. Chim. Acta, 2012, 389, 66-76. "Copper(II) halide coordination complexes and salts of 3-halo-2-methylpyridines: Synthesis, structure and magnetism"

Husain, A.; Turnbull, M.M.; Nami, S.A.A.; Moheman, A.; Siddiqi, K.S. J.Coord. Chem. 2012, 65, 2593-611. "Synthesis, Crystal structure and magnetic properties of single end-to-end azido bridged 1D chain coordination polymers of copper(II)"

Wikaira, J.L.; Landee, C.P.; Turnbull, M.M. Acta Cryst. E 2013, E69, m229-30. "Hexaaquacopper(II) bis(tetrafluoridoborate)–pyrazine-1,4-dioxide (1/3)"

Awwadi,F.F.; Haddad, S.F.; Turnbull, M.M.; Landee, C.P.; Willett, R.D. CrystEngComm 2013, 15, 3111-8. "Copper-halide Bonds as Magnetic Tunnels; Structural, Magnetic and Theoretical Studies of trans-Bis(2,5-dibromopyridine)dihalocopper(II) and trans-Bis(2-bromopyridine)dibromocopper(II)"

Landee, C.P.; Turnbull, M.M. Eur. J. Inorg. Chem. 2013, 2266-85. "Recent Developments in Low-Dimensional Cu(II) Molecular Magnets" (cover article and research profile, pg. 2250)
Solomon, B.L.; Landee, C.P.; Jasinski, J.P.;Turnbull, M.M. European Chemical Bulletin 2013, 2, 845-9. "Synthesis, Structure, and Magnetic Behavior of [Cu2(pyrazine)3(CH3O)2](ClO4)2"

Turnbull, M.M.; Bruda, S.; Wikaira, J.L. Eur. Chem. Bull. 2013, 2, 2038-40. "[(N-(2-pyridylcarboyl)pyridine-2-carbamido)(pyridine-2-carbamide)-copper(II)] nitrate dihydrate"

Vela, S.; Deumal, M.; Turnbull, M.M.; Novoa, J.J. Polyhedron 2013, 64, 163-71. "A theoretical analysis of the magnetic properties of the low dimensional copper(II)-dichloro-(2-Cl-pyrazine)2 molecule-based magnet"

Shortsleeves, K.C.; Turnbull, M.M.; Seith, C.B.; Tripodakis, E.N.; Xiao, F.; Landee, C.P.; Dawe, L.N.; Garrett, D.; Diaz de Delgado, G.; Foxman, B.M. Polyhedron 2013, 64, 110-21. "Crystallographic and Magnetic Studies of the 2-Pyridone/Copper Halide System"

APPENDIX E

Grants and contracts, patents, and corporate agreements of General Partner

GLSynthesis Grants and contracts:

1. Synthesis and Testing of Dermal Anesthetics
   Funded by Bridge Pharma Inc., Sarasota, FL
   Period: 11-15-97 to 9-15-98
   G.E. Wright, P.I.
   Budget: $135,000
2. Gram+ Antimicrobials Targeted to DNA Polymerase III
   Phase I STTR grant AI41260
   National Institute of Allergy and Infectious Diseases
   G.E. Wright, P.I.
   Period: 2-1-98 to 9-30-98; extended to 7-14-99
   Budget: $100,000
3. Drugs to Prevent Recurrent Herpes virus Infections
   Phase I SBIR grant AI43170
   National Institute of Allergy and Infectious Diseases
   G.E. Wright, P.I.
   Period: 3-1-98 to 8-30-98; extended to 8-31-99
   Budget: $100,000
4. Commercial Production of Dinucleotide Phosphoramidites
   Phase I SBIR grant GM57726
   National Institute of General Medical Sciences
   J.L. Chen, P.I.
   Period: 3-1-98 to 8-30-98; extended to 4-30-00
   Budget: $100,000
5. Novel Drugs to Treat Urinary Incontinence
   Phase I SBIR grant AG15259
   National Institute on Aging
   J.L. Chen, P.I.
   Period: 5-1-98 to 10-31-98; extended to 4-30-99
   Budget: $100,000
6. Antiangiogenesis by Thymidine Phosphorylase Inhibitors
   Phase I SBIR grant CA80476
   National Cancer Institute
   G.E. Wright, P.I.
   Period: 1-1-99 to 6-30-99; extended to 6/30/00
   Budget: $103,341
7. Gram+ Antimicrobials Targeted to DNA Polymerase III
   Phase II SBIR grant AI41260
   National Institute of Allergy and Infectious Diseases
   Collaborator: UMass Medical School
   G.E. Wright, P.I.
   Period: 7-15-99 to 6-30-02
   Budget: $1,115,000
8. Hybrid Molecules Designed to Enhance Antibiotic Activity
   Phase I SBIR grant GM60828
   National Institute of General Medical Sciences
   P.M. Tarantino, Jr., P.I.

Period: 2-1-00 to 1-31-01
Budget: $146,287

9. Synthesis of Antibiotic Drugs
Research contract, Microbiotix Inc., Worcester, MA
G.E. Wright, P.I.
Period: 1-1-00 to 12-31-01; Budget: $1,500,000

10. Drugs to Prevent Recurrent Herpes virus Infections
Phase II SBIR grant AI43170
National Institute of Allergy and Infectious Diseases
G.E. Wright, P.I.
Period: 5-1-00 to 4-30-03
Budget: $786,729

11. Novel Drugs to Treat Urinary Incontinence
Phase II SBIR grant AG15259
National Institute on Aging
J.L. Chen, P.I.
Period: 9-1-00 to 8-31-03
Budget: $974,798

12. Synthesis of Antibiotic Drugs
Research contract, Microbiotix Inc., Worcester, MA
G.E. Wright, P.I.
Period: 1-1-02 to 12-31-02
Budget: $600,000

13. Hybrid Molecules Designed to Enhance Antibiotic Activity
Phase II SBIR grant GM60828
National Institute of General Medical Sciences
G.E. Wright, P.I.
Period: 5-1-02 to 4-31-04
Budget: $977,126

14. DNA Polymerase IIIE, a New Antibiotic Target
Phase I SBIR grant AI51103
National Institute of Allergy and Infectious Diseases
G.E. Wright, P.I.
Period: 7-1-02 to 6-30-03; Budget: $307,138

15. Fluorosome Technique for Drug Permeability Studies (TFC)
Phase I SBIR grant RR16401-01A1
National Center for Research Resources
K.A. Holm, P.I.
Period: 8-1-02 to 7-31-03
Budget: $262,854

16. New Dermal Anesthetics
Phase II SBIR grant AR46396-02A1
National Institute of Arthritis and Musculoskeletal and Skin Diseases
V.B. Ciofalo, P.I.
Period: 9-27-02 to 8-31-04
Budget: $1,773,278

17. Antiviral Drugs for Treatment of Herpes B Infections
Phase I SBIR grant AI055128-01

National Institute of Allergy and Infectious Diseases
G.E. Wright, P.I.
Period: 5-15-03 to 5-14-04
Budget: $253,746

18. Non-sedating Atropisomeric Drugs and Atopic Diseases
Phase I SBIR grant GM070035-01
National Institute of General Medical Sciences
A.T. Maioli, P.I.
Period: 3-1-04 to 2-28-06
Budget: $225,752

19. Fluorosome Technique for Drug Permeability Studies (TFC)
Phase II SBIR grant RR16401-02
National Center for Research Resources
G.E. Wright, P.I.
Period: 8-9-04 to 7-31-06
Budget: $944,231

20. DNA Polymerase IIIE, a New Antibiotic Target
Phase II SBIR grant AI51103
National Institute of Allergy and Infectious Diseases
G.E. Wright, P.I.
Period: 4-1-05 to 3-31-07
Budget: $1,850,402

21. Rapid in vitro substrate assay for the multi-drug resistant p-glycoprotein (TFC)
Phase I SBIR grant GM075397
D.L. Melchior, P.I.
Period: 9-19-05 to 9-18-06
Budget: $140,384

22. High Throughput Membrane-Water Partition Coefficients (TFC)
Phase I SBIR grant GM073279
G.E. Wright P.I.
Period: 9-15-05 to 9-14-06
Budget: $255,352

23. Non-sedating Atropisomeric Drugs and Atopic Diseases
Phase II SBIR grant GM070035-02
National Institute of General Medical Sciences
J.C. Chen, P.I.
Period: 7-1-06 to 5-31-08
Budget: $2,470,841

24. Diadenosine Boranotetraphosph(on)ates as Antithrombotic Drugs
Phase I SBIR grant HL081992-01A1
National Heart Lung and Blood Institute
I. Yanachkov, P.I.
Period: 2-1-07 to 10-31-07
Budget: $299,670

25. Novel Antithrombotic Diadenosine Tetraphosphate Analogs
Phase I SBIR grant HL088828-01
National Heart, Lung and Blood Institute
I. Yanachkov, P.I.

Period: 6-25-07 to 6-30-08
Budget: $ 325,110

26. Hybrid Molecules Designed to Enhance Antibiotic Activity
Competing renewal of Phase II SBIR grant AI068349
National Institute of Allergy and Infectious Diseases
G.E. Wright, P.I.
Period: 5-1-06 to 4-30-10
Budget: $2,979,738

27. Rapid in vitro substrate assay for the multi-drug resistant p-glycoprotein (TFC)
Phase II SBIR grant GM075397-02-03
National Institute of General Medical Sciences
D.L. Melchior, P.I.
Period: 1-1-08 to 12-31-10
Budget: $1,078,178.

28. Novel Drugs to Treat Urinary Incontinence
Competing renewal of Phase II SBIR grant AG15259
National Institute on Aging
J.L. Chen, P.I.
Period: 4-1-08 to 3-31-11
Budget: $1,688,749.

29. Solid state synthesis and applications of oligo(phenylene-ethynes) (TFC)
Phase I SBIR grantGM093694-01
National Institute of General Medical Sciences
W.-C. Xu, P.I.
Period: 4-1-10-3-31-12
Budget: $199,664

30. Analogs of GTP as novel inhibitors of bacterial c-di-GMP-synthesizing enzymes
SBIR phase I grant AI091287-01
National Institute of Allergy and Infectious Diseases
G.E. Wright, P.I.
Period: 7-1-10 to 6-30-2012
Budget: $297,373

31. Novel Antithrombotic Diadenosine Tetraphosphate Analogs
Phase II SBIR grant HL088828
National Heart, Lung and Blood Institute
I. Yanachkov, P.I.
Period: 8-7-09 to 6-30-11; no cost extension to 6-30-13
Budget: $1,548,117

32. Preclinical development of a novel antibacterial for Clostridium difficile disease
Competing renewal of Phase II SBIR grant AI51103
National Institute of Allergy and Infectious Diseases
G.E. Wright, P.I.
Period: 3-15-10 to 2-28-13; no cost extension to 2-28-14.
Budget: $3,000,000

33. Oral bioavailability of a novel anti-herpes reactivation drug
Phase I SBIR grant AI1003000-01
National Institute of Allergy and Infectious Diseases
S. Dvoskin and G.E. Wright, co-P.I.s

Period: 9-1-12 to 8-30-13
Budget: $300,000

34. Novel Antithrombotic Diadenosine Tetraphosphate Analogs
Competing renewal of Phase II SBIR grant HL088828, now TR000983
National Center for Advancing Translational Sciences
I. Yanachkov, P.I.
Period: 7-1-13 to 6-30-16
Budget: $3,174,842.

35. A Soft Topical Antiandrogenic Drug
Phase I SBIR grant AR063503-01
National Institute of Arthritis and Musculoskeletal and Skin Diseases
W. Xu, P.I.
Period: 9-1-13 to 8-31-14
Budget: $221,850

Patents:

ISSUED

U.S. Patent 6,207,852, issued March 27, 2001
Title: Smooth Muscle Spasmolytic Agents, Compositions and Methods of Use Thereof
Inventors: A.K. Gunnar Aberg, George E. Wright and Jan L. Chen
Assignee: Bridge Pharma Inc.

U.S. Patent 6,207,683, issued March 27, 2001
Title: Benzocycloheptathiophene Compounds
Inventors: A.K. Gunnar Aberg, George E. Wright and Jan L. Chen
Assignee: Bridge Pharma Inc.

U.S. Patent 6,413,987, issued July 2, 2002
Title: Dermal Anesthetic Agents
Inventors: A.K. Gunnar Aberg, George E. Wright and Jan L. Chen
Assignee: Bridge Pharma Inc.

Australian Patent 777,517, issued June 6, 2000
Title: Dermal Anesthetic Agents
Inventors: A.K. Gunnar Aberg, George E. Wright and Jan L. Chen
Assignee: Bridge Pharma Inc.

U.S. Patent 6,177,437, issued January 23, 2001
Title: Inhibitors of Herpes Simplex Virus Uracil-DNA Glycosylase
Inventor: George E. Wright
Assignee: University of Massachusetts

U.S. Patent 5,516,905, issued May 14, 1996
Title: Antibiotic Compounds and Methods to Treat Gram-Positive Bacterial and Mycoplasma Infections
Inventors: Neal C. Brown and George E. Wright
Assignee: University of Massachusetts

U.S. Patent 5,646,155, issued July 8, 1997

Title: Drugs to Prevent Recurrent Herpes Virus Infections
Inventor: George E. Wright
Assignee: University of Massachusetts

U.S. Patent 6,417,180, issued July 9, 2002
Title: Zinc-Finger-Reactive Antimicrobial Agents
Inventors: Neal C. Brown, Marjorie H. Barnes and George E. Wright
Assignee: University of Massachusetts

U.S. Patent 6,448,256, issued September 10, 2002
Title: Antibiotic Prodrugs
Inventors: George E. Wright, Neal C. Brown and Chengxin Zhi
Assignee: University of Massachusetts

U.S. Patent 6,777,420, issued August 17, 2004
Title: Novel Heterocyclic Antibacterial Compounds
Inventors: Chengxin Zhi and George E. Wright
Assignee: Microbiotix Inc.

U.S. Patent 6,926,763, issued August 9, 2005
Title: Purine and Isosteric Antibacterial Compounds
Inventors: George E. Wright, Wei-Chu Xu and Neal C. Brown
Assignee: GLSynthesis Inc.

U.S. Patent 7,060,292, issued June 13, 2006
Title: Lipid Structures and Uses Thereof
Inventors: Donald Melchior and Anthony Carruthers
Assignee: GLSynthesis Inc.

U.S. Patent 7,141,696, issued November 28, 2006
Title: Smooth Muscle Spasmolytic Agents
Inventors: A.K. Gunnar Aberg, Jan L. Chen, Andrew Maioli and George E. Wright
Assignee: Bridge Pharma Inc.

U.S. Patent 7,226,934, issued June 5, 2007
Title: Optically Active Isomers of Ketotifen and Therapeutically Active Metabolites Thereof
Inventors: A.K. Gunnar Aberg, Jan L. Chen, George E. Wright and Andrew Maioli
Assignee: Bridge Pharma Inc.

U.S. Patent 7,557,128, issued July 7, 2009
Title: Optically active isomers of ketotifen and therapeutically active metabiolites thereof.
Inventors: A.K.G. Aberg, G.E. Wright, J.L. Chen amd A.T. Maioli
Assignee: Bridge Pharma Inc.

U.S. Patent 7,592,458, issued September 22, 2009
Title: Dermal Anesthetic Compounds and Pharmaceutical Compositions for Inducing Local Anesthesia and Mitigating Neuropathic Pain.

Inventors: George E. Wright and A.K. Gunnar Aberg
Assignee: Bridge Pharma Inc.

U.S. Patent 7,727,995 B2, issued June 1, 2010
Title: Novel Antiherpes Drug Combinations
Inventor: George E. Wright
Assignee: University of Massachusetts

U.S. Patent 7,872,015, issued January 18, 2011
Title: Optically active isomers of ketotifen and therapeutically active metabiolites thereof.
Inventors: A.K.G. Aberg, G.E. Wright, J.L. Chen amd A.T. Maioli
Assignee: Bridge Pharma Inc.

U.S. Patent 8,288,545, issued Oct 16, 2012
Title: Reactive Pyrophosphoric and Bisphosphonic Acid Derivatives and Methods of Their Use
Inventors: Ivan Yanachkov and George Wright
Assignee: GLSynthesis Inc.

US Patent 8,575.127, issued November 5, 2013
Title: Novel Antithrombotic Diadenosine Tetraphosphate Analogs
Inventors: Ivan B. Yanachkov and George E. Wright
Assignee: GLSynthesis Inc.

PENDING

International Patent Application PCT/US2009/006196, filed 11-20-09
(published as EP2364086, CA2747188)
Title: Novel Antithrombotic Diadenosine Tetraphosphate Analogs
Inventors: Ivan B. Yanachkov and George E. Wright
Assignee: GLSynthesis Inc.

International Patent Application PCT/US2010/048379, filed 9-9-11
(published as US2012232077, JP2013504592, EP2475252, CA2772907).
Note: US claims allowed 3-20-14.
Title: Selective Antibacterials for Clostridium Difficile Infections
Inventors: George E. Wright and Wei-Chu Xu
Assignee: GLSynthesis Inc.

Corporate agreements and stock:

Bridge Pharma Inc., Sarasota, FL
Pharmaceutial Development Agreement (PDA), Dermal Anesthetics, 4% licensing fees and royalties, 11-5-02
PDA, Urinary Incontinence, 3% licensing fees and royalties, 7-2-02
PDA, Ketotifens, 4% licensing fees and royalties, 2-3-03
Microbiotix Inc., Worcester, MA
Letter of Intent, Hybrid Antibiotics, 37.5% licensing fees and royalties, 5-4-06
Hygeia Therapeutics Inc., Holden, MA
75,000 shares common stock*
Canterbury Labs. Inc., Holden, MA
75,000 shares common stock (not yet issued)*
* Merged into Restorgenex Corp.; stock not yet issued
GLSyntech LLC, Ambler, PA
LLC partnership 20%, 9-24-08
GLSynthesis Shanghai Co. Ltd., Shanghai, China
JC and GW agreement, 1-3-01 (shell company only)
Yancheng GLPharma Co. Ltd., Yancheng, Jiangsu, China
GLS owns 25% of stock, 6-13-10
ZATA Pharmaceuticals Inc., Worcester, MA
(Agreement pending)

APPENDIX F

Citations to scholarly publications by General Partner

GLSynthesis citations:

C. Zhi, Z. Long, J. Gambino, W. Xu, N.C. Brown, M. Barnes, M. Butler, W. LaMarr and G.E. Wright, Synthesis of Substituted 6-Anilinouracils and Their Inhibition of DNA Polymerase IIIC and Gram-positive Bacterial Growth, J. Med. Chem. 46, 2731-2739 (2003)

G.E. Wright, N.C. Brown, W.-C. Xu, Z. Long, C. Zhi, J.J. Gambino, M.H. Barnes and M.M. Butler, Active site directed inhibitors of replication-specific bacterial DNA polymerases, Bioorg. Med. Chem. Lett. 15, 729-732 (2005).

A. Manikowski, A. Verri, A. Lossani, B.M. Gebhardt, J. Gambino, F. Focher, S. Spadari, and G.E. Wright. Inhibition of Herpes Simplex Virus Thymidine Kinases by 2-Phenylamino-6-oxopurines and Related Compounds: Structure-activity Relationships and Antiherpetic Activity *In Vivo*. J. Med. Chem. 48, 3919-3929 (2005).

C. Zhi, Z.-Y. Long, A. Manikowski, N.C. Brown, P.M. Tarantino, Jr., K. Holm, E.J. Dix, G.E. Wright, K.A. Foster, M.M. Butler, W.A. LaMarr, D.J. Skow, I. Motorina, S. Lamothe, and R. Storer. Synthesis and Antibacterial Activity of 3-Substituted-6-(3-ethyl-4-methylanilino)uracils. J. Med. Chem., 48, 7063-7074 (2005).

C. Zhi, Z.-Y. Long, A. Manikowski, J. Comstock, W.-C. Xu, N.C. Brown, P.M. Tarantino, Jr., K.A. Holm, E.J. Dix, G.E. Wright, M.H. Barnes, M.M. Butler, K.A. Foster, W.A. LaMarr, B. Bachand, R. Bethell, C. Cadilhac, S. Charron, S. Lamothe, I. Motorina, and R. Storer. Hybrid Antibacterials. DNA polymerase:topoisomerase inhibitors. J. Med. Chem. 49, 1455-1465 (2006).

M.M. Butler, W.A. LaMarr, K.A. Foster, M.H. Barnes, D.J. Skow, P.T. Lyden, C. Zhi, N.C. Brown, G.E. Wright and T.L. Bowlin. Antibacterial Activity and Mechanism of Action of a Novel Anilinouracil:Fluoroquinolone Hybrid Compound. Antimicrob. Agents Chemother. 51, 119-127 (2007).

F. Focher, A. Lossani, A. Verri, S. Spadari, A. Maioli, J.J. Gambino, G.E. Wright, R. Eberle, D.H. Black, P. Medveczky, M. Medveczky and D. Shugar. Sensitivity of Monkey B Virus (*Cercopithecine herpesvirus* 1, BV) to Antiviral Drugs. Role of Thymidine Kinase in Antiviral Activity of Substrate Analogs and Acyclonucleosides. Amtimicrob. Agents Chemother. 51, 2028-2034 (2007).

D. Tabatadze, P. Zamecnik, I. Yanachkov, G. Wright, K. Pierson, S. Zhang , A. Bogdanov Jr. and V. Metelev. A Novel Thymidine Phosphoramidite Synthon for Incorporation of Internucleoside Phosphate Linkers during Automated Oligodeoxynucleotide Synthesis. Nucleos. Nucleot. Nucl. Acids 27, 157-172 (2008).

M.M.Butler and G.E. Wright, A Method to Assay Inhibitors of DNA Polymerase III Activity. in New Antibiotic Targets, W.S. Champney, Ed., Humana Press Inc., Totowa NJ, 2008, pp. 25-36.

A. Lossani, A. Torti, S. Gatti, A. Bruno, R. Maserati, G.E. Wright and F. Focher. Thymidine kinase and uridine-cytidine kinase from *Entamoeba histolytica*. Cloning, characterization and search for specific inhibitors. Parasitol. 136, 595-602 (2009).

B.M. Gebhardt, F. Focher, R. Eberle, A. Manikowski and G.E. Wright. Effects of Combinations of Antiviral Drugs on Herpes Simplex Encephalitis. Drug Design, Dev. Therapy. 3, 289-294 (2009).

H.Chang, I.B. Yanachkov, A.D. Michelson, Y.-F. Li, M.R. Barnard, G.E. Wright and A.L. Frelinger III. Agonist and Antagonist Effects of Diadenosine Tetraphosphate, a Platelet Dense Granule Constituent, on Platelet $P2Y_1$, $P2Y_{12}$ and $P2X_1$ Receptors. Thromb. Res., 125, 159-165 (2010).

I.B. Yanachkov, E. J. Dix, M.I. Yanachkova and G.E. Wright. P1,P2-Diimidazolyl derivatives of pyrophosphate and bis-phosphonates – synthesis, properties, and use in preparation of dinucleoside tetraphosphates and analogs. Org. Biomol. Chem. 9: 730-738 (2011).

F. Focher, A. Lossani, A. Torti, J. Gambino and G.E. Wright. Binding Modes of 2-Phenylamino-6-oxopurines to Herpes Simplex Virus Thymidine Kinases. Lett. Drug. Design Discov, 8, 1-8 (2011).

W-C. Xu, G.E. Wright, N.C. Brown, Z.-y.Long, C. Zhi, S. Dvoskin, J.J. Gambino, M.H. Barnes and M.M. Butler. 7-Alkyl-N2-Substituted-3-deazaguanines. Synthesis, DNA polymerase III inhibition and antibacterial activity. Bioorg. Med. Chem. Lett. 21, 4197-4202 (2011).

A. Torti, A. Lossani, L. Savi, F. Focher, G.E. Wright, N.C. Brown and W.-C. Xu. Cloning and expression of DNA polymerase IIIC of *Clostridium difficile*: basis for activity of antibacterial compounds, Curr. Enz. Inh. 7, 147-153 (2011).

S. Dvoskin, W.-C. Xu, N. C. Brown, I.B. Yanachkov, M. Yanachkova and G.E. Wright. A novel agent effective against infection with *Clostridium difficile.* Antimicr. Agents Chemother. 56, 1624-1626 (2012).

A. Lossani, L. Savi, A. Manikowski, A. Maioli, J. Ganbino, F. Focher, S. Spadari and G.E. Wright. N2-Phenyl-9-(hydroxyalkyl)guanines and related compounds are substrates for Herpes simplex virus thymidine kinases. J. Molec. Biochem. 1, 21-25 (2012).

D.L. Melchior, F.J. Sharom, R. Evers, G.E. Wright, J.W.K. Chu, S.E. Wright, X. Chu and J. Yabut. Determining P-glycoprotein-drug interactions: evaluation of reconstituted P-glycoprotein by a liposomal system and LLC-MDR1 polarized cell monolayers. J. Pharm. Tox. Meth. 65, 64-74 (2012).
M.M. Butler, D.L. Shinabarger, D.M. Citron, C.P. Kelly, S. Dvoskin, G.E. Wright, H. Feng, S.Tzipori and T.L. Bowlin. MBX-500; a Hybrid Antibiotic With *In Vitro* and *In Vivo* Efficacy Against Toxigenic Clostridium difficile. Antimicr. Agents Chemother. 56, 4786-4792 (2012).

M.H. Barnes, M.M. Butler, G.E. Wright and N.C. Brown. Antimicrobials targeted to the replication-specific DNA polymerases of Gram-positive bacteria: Target potential of dnaE. Infect. Dis. – Drug Targets. 12, 327-331 (2012).

H. Chang, I.B. Yanachkov, E.J. Dix, Y. Li, M.R. Barnard, G.E. Wright, A.D. Michelson and A.L. Frelinger III. Modified Diadenosine Tetraphosphates with Dual Specificity for $P2Y_1$ and $P2Y_{12}$ are Potent Antagonists of ADP-induced Platelet Activation. J. Thromb. Haemost. 10, 2573-2580 (2012).

H. Chang, E.J. Dix, M. Yanachkova, Y.-F. Li, M.R. Barnard, G.E. Wright, A.D. Michelson, A.L. Frelinger III, and I.B. Yanachkov. Antiplatelet Activity, $P2Y_1$ and $P2Y_{12}$ inhibition, and Metabolism in Plasma of Diastereomers of Diadenosine-5',5'''-P^1,P^4-dithio-P^2,P^3-chloromethylenetetraphosphate. J. Thromb. Haemost. Submitted for publication.

Presentations and abstracts:
M.M. Butler, M.H. Barnes, C. Zhi, Z.-Y. Long, W.-C. Xu, N.C. Brown, T.J. Leighton, G.E. Wright and T.L. Bowlin, Inhibition of Bacillus anthracis DNA Polymerases and Cell Growth by Derivatives of the Anilinouracil Family. *International Congress on Antimicrobial Agents and Chemotherapy*. 2004.

M.M. Butler, S.C. Cardinale, M.H. Barnes, J.J. Gambino, W .Xu, G.E. Wright AND T.L. Bowlin, Novel Inhibitors of Bacterial DNA Polymerase IIIC. *International Congress on Antimicrobial Agents and Chemotherapy*, Washington, D.C. September, 2005.

G.E. Wright, S. Dvoskin, M. Yanachkova, W.Xu, I.B. Yanachkov, E. Dix, N.C. Brown, M.M. Butler, L. Kustigian and T. Bowlin, Prodrug Delivery of AU-FQ Antibacterial Compounds. *International Congress on Antimicrobial Agents and Chemotherapy,* Chicago, September 2007.

H. Chang, I.B. Yanachkov, A.D. Michelson, G.E. Wright and A.L. Frelinger. Diadenosine P^1, P^4-tetraphosphate and Its Tetraphosphonate Derivatives Synergistically Inhibit Platelet Activation via Both $P2Y_1$ and $P2Y_{12}$. *American College of Cardiology Meeting*, Chicago, March 29-April, 2008.

H. Chang, I.B. Yanachkov, A.D. Michelson, G.E. Wright and A.L. Frelinger. Diadenosine P^1, P^4-tetraphosphate and Its Tetraphosphonate Derivatives Synergistically Inhibit Platelet Activation via Both $P2Y_1$ and $P2Y_{12}$. *ADP 2008. Platelet P2 Receptors: From Basic Science to Clinical Practice*. Bormio, Italy. June 19-21, 2008.

A. Lossani, A. Torti, S.Gatti, G.E. Wright and F. Focher. Cloning and characterization of thymidine kinase and uridine-cytidine kinase from Entamoeba histolytica. Search for specific inhibitors. *Federazione Italiana Scienze della Vita*, Riva del Garda, Italy, September 24-27, 2008.

H. Chang, I.B. Yanachkov, A.D. Michelson, Y.-F. Li, M.R. Barnard, G.E. Wright and A.L. Frelinger. Agonist and Antagonist Effects of Diadenosine Tetraphosphate, a Platelet Dense Granule Constituent, on Platelet $P2Y_1$, $P2Y_{12}$ and $P2X_1$ Receptors. *Platelets 2008 International Symposium*, Woods Hole, MA, October 15-18, 2008.

D.L. Melchior, F.J. Sharom, G.E. Wright, S.E. Wright and R. Liu. Reconstituted P-glycoprotein in Fluorosome® lipid bilayer vesicles - basis for an *in vitro* P-glycoprotein assay. *Conference on Multidrug Resistance and ABC Transporters*, Baltimore, MD, November 5, 2008.

H. Chang, I.B. Yanachkov, A.D. Michelson, Y.-F. Li, M. R. Barnard, G.E. Wright and A.L. Frelinger. Agonist and Antagonist Effects of Diadenosine Tetraphosphate, a Platelet Dense Granule Constituent, on Platelet $P2Y_1$, $P2Y_{12}$ and $P2X_1$ Receptors. *American Society of Hematology Meeting*, San Francisco, CA, December 6-9, 2008.

E. Dix, I. Yanachkov, M. Yanachkova, L. Montville and G. Wright. Synthesis and Plasma Stability of Modified Diadenosine Tetraphosphates, *Ninth Meeting of the New England Drug Metabolism Study Group*. Shrewsbury, MA June 10, 2009.

S. Dvoskin, A. X. Chen, H. Chen and G. E. Wright. AU-FQ antibacterial compounds: activity against Gram+ organisms and development of an emulsion formulation. *International Congress on Antimicrobial Agents and Chemotherapy,* San Francisco, September 15, 2009.

F.J. Sharom, D.L. Melchior, G.E. Wright, R. Liu and S.E. Wright. Reconstituted P-glycoprotein in Fluorosome® lipid bilayer vesicles - basis for an *in vitro* P-glycoprotein assay. J. Pharm. Pharm. Sci. 12, 102, 2009; abstract for 12th Annual Symposium of the Canadian Society for Pharmaceutical Sciences (Toronto, ON).

E.J. Dell, D.L. Melchior, G.E. Wright, S.E. Wright, F.J. Sharom, J.W.K. Chu, R. Evers, X. Chu and J. Yabut. A Fast and Simple Method for Measuring P-Glycoprotein (Pgp) Inhibition. The Fluorosome®-trans-pgp Assay and the FLUOstar Omega. *Society for Biomolecular Sciences Meeting,* Phoenix AZ, April 12-14, 2010.

A. Torti, A. Lossani, F. Focher, W.-C. Xu, S. Dvoskin, J.J. Gambino, N.C. Brown and G.E. Wright. Clostridium difficile DNA polymerase IIIC: cloning, purification and analysis of specific inhibitors. *Evolving DNA* Polymerases*: Chemistry meets Biology*, Monte Verita, Switzerland, May 9-14, 2010.

I.B. Yanachkov, E.J. Dix, M.I. Yanachkova, S. Dvoskin, W.-C. Xu, B.M. Gebhardt and G.E. Wright. Herpes simplex virus thymidine kinase inhibitor GLS122E and its 6-deoxy prodrug GLS361B (Sacrovir™) - potential for preventing viral disease recurrence *in vivo*. *24th International Congress on Antiviral Research*, Sofia, Bulgaria, May 8-11, 2011. Antivir. Res. 90, A77-A78 (2011)

M.M. Butler, D.L. Shinabarger, D.M. Citron, C.P. Kelly, S. Dvoskin, G.E. Wright, H. Feng, S. Tzipori and T.L. Bowlin Efficacy of a Novel Anilinouracil/Fluoroquinolone Hybrid Against *Clostridium difficile. International Congress on Antimicrobial Agents and Chemotherapy*, Chicago, September 19, 2011.

M.A. Berny-Lang, H. Chang, K. Przyklenk, M. Yanachkova, M.R. Barnard, J.K. Brooks, S. Zayas, A. Nigam, M. Lampa, E.J. Dix, G.E. Wright, A.D. Michelson, I.B. Yanachkov and A.L. Frelinger III. Diadenosine tetraphosphate inhibitors of platelet aggregation: structure-activity relationships, $P2Y_1$, $P2Y_{12}$, and $P2X_1$ receptor selectivity, and *in vivo* antithrombotic effect. *Platelets 2012 International Symposium*, Beverly, MA, June 7-11, 2012.

K. Przyklenk, G.E. Wright and I.B. Yanachkov. Dual Inhibition of Platelet ADP P2Y12 and P2Y1 Receptors Evokes a Rapid and Robust Attenuation of Recurrent Thrombosis: First *In Vivo* Evidence. *American Heart Association Meeting*, November 2012.

A.L. Frelinger III, H. Chang, E.J. Dix, M. Yanachkova, Y-F. Li, M.R. Barnard, G.E. Wright, A.D. Michelson, and I.B. Yanachkov. Antiplatelet Activity, $P2Y_1$ and $P2Y_{12}$ Inhibition, and Metabolism in Plasma of Diastereomers of the Ap_4A Analog Diadenosine-5',5'''-P^1,P^4-dithio-P^2,P^3-chloromethylenetetraphosphate. *International Society of Thrombosis and Haemostasis Meeting*, Amsterdam, Netherlands, June 29-July 4, 2013.

APPENDIX G

Subscription agreement

Anti-infective Research and Development Limited Partnership

A Massachusetts Limited Partnership

Name of Investor: _____

Principal Amount of Investment: $ _____

Date: _____

Ladies and Gentlemen:

The undersigned (the "**Investor**") understands that this subscription is made with respect to the Anti-Infective Research and Development Limited Partnership, a Massachusetts limited partnership (the "**Partnership**"). The Investor further understands that the Partnership is offering limited partnership interest (the "**Securities**").

1. ***Subscription.*** The Investor irrevocably subscribes for the Securities in the amount specified above. The Investor agrees to contribute the amount specified above by cashier's check or personal check on or before the closing date designated by the Partnership (the "**Closing Date**").

2. ***Investor Representations.*** The Investor hereby represents and warrants to the Partnership as follows:

A. The Investor acknowledges that all documents and other materials pertaining to this investment that the Investor has requested to examine have been made available for inspection by the Investor. The Investor, or a person or persons acting on the Investor's behalf, has had a reasonable opportunity to ask questions of and receive answers from the Partnership concerning the offering of the Securities and the Partnership, including but not limited to, the Partnership's prospective business plans, and all such questions have been answered to the full satisfaction of the Investor. No representations (oral or otherwise) upon which the Investor is relying have been made to the Investor in connection with the offering of the Securities other than as set forth in this memorandum.

B. The Investor acknowledges that the Securities have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), in reliance upon an exemption therefrom for non-public offerings, that the Securities must be held indefinitely unless the sale thereof is registered under the Securities Act, or an exemption from such registration is available under Rule 144 of the Securities Act or otherwise, and that the Partnership is under no obligation to register the Securities or to assist in complying with any exemption from registration.

C. The Investor will not sell, hypothecate or otherwise transfer the Securities without registering or qualifying them under the Securities Act and applicable state securities laws unless the transfer is exempt from registration or qualification under such laws.

Further, the Investor understands that its right to transfer the Securities is subject to the provisions of the Securities.

D. The Securities are being purchased solely for the Investor's own account, and not for the account of any other person, and not with a view to distribution, assignment or resale to others, or to fractionalization in whole or in part. No other person has or will have a direct or indirect beneficial interest in the Securities, except as disclosed to the Partnership on an attachment hereto. To the extent any other person has any such beneficial interest, the Partnership will require such persons to execute a signature page to this Subscription Agreement.

E. All information that the Investor has provided to the Partnership concerning the Investor is correct and complete as of the date set forth on the signature page.

F. Except as disclosed to the Partnership, the Investor (i) is an "accredited investor" as that term is defined in Regulation D under the Securities Act (a copy of which definition is attached to this Subscription Agreement); (ii) has adequate means of providing for current needs and possible personal contingencies; (iii) has no need for liquidity in this investment; and (iv) is able to bear the substantial economic risks of an investment in the Securities for an indefinite period, including the loss of the entire investment.

G. The Investor recognizes that the Partnership is a start-up entity without financial and operating history and that an investment in the Securities involves substantial risks, and the Investor has taken full cognizance of and understands all of the risk factors related to the purchase of the Securities. The Investor acknowledges and understands that any financial projections that may have been provided to it are based upon assumptions of future operating results developed by the Partnership. The Investor acknowledges and understands that the financial projections, therefore, merely represent an estimate by the Partnership of future results that it hopes can be achieved by the Partnership based upon assumptions as to certain events (many of which are beyond the Partnership's control). The Investor further acknowledges and understands that no assurances or representations can be given that the actual results of the operations will conform to the projected results for any or all of the indicated years.

H. The Investor has carefully considered and has, to the extent it believes such discussion necessary, discussed with its professional legal, tax and financial advisors, the suitability of investing in the Securities for its particular tax and financial situation, and the Investor has determined that the Securities are a suitable investment for it. In making its investment decision, the Investor has relied solely on its own advisors, and not on the advice of the General Partner or its legal counsel.

I. The Investor has not received any general solicitation or general advertising concerning the Partnership or the Securities, nor is the Investor aware that any such solicitation or advertising was received by anyone else.

3. ***Acceptance.*** The Investor understands that this Subscription Agreement as submitted by the Investor does not become binding on the Partnership until accepted by the Partnership and that the General Partner has full right to accept or reject this Subscription

Agreement in its sole and absolute discretion, provided that the General Partner must do so no later than the Closing Date.

4. ***Indemnification.*** The Investor hereby agrees to indemnify and hold harmless the General Partner, each Investor, Manager, officer, director and/or control person of any such entity who was or is a party or is threatened to be made a party to any threatened, pending or completed suit, action or proceeding, whether civil or criminal, administrative or investigative, to the fullest extent permitted by law, by reason of or arising from any actual or alleged misrepresentation or misstatement of facts or omission to represent or state facts made by the Investor to the General Partner including, without limitation, any such misrepresentation, misstatement or omission contained in this Subscription Agreement, against any losses, damages, liabilities and expenses for which the General Partner, any Investor, Manager, officer, director and/or control person of any such entity has not otherwise been reimbursed (including attorneys' fees, judgments, fines and amounts paid in settlement or incurred in a securities or other action in which no judgment in favor of the Investor is rendered) actually and reasonably incurred by such person or entity in connection with such action, suit or proceeding.

5. ***Non-Assignable.*** This Subscription Agreement is not transferable or assignable by the Investor.

6. ***Governing Law.*** This Subscription Agreement will be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, without regard to conflict of laws principles.

_____
(signed)

Name (typed or printed): _____

Address: _____

_____

Phone Number: _____

SSN or EIN: _____

Accepted as of _____, 2014

Anti-Infective Research and Development Limited Partnership
By: GLSynthesis, Inc., its General Partner

By: _____
George E. Wright, Ph.D., CEO

Appendix G (continued)

Definition of Accredited Investor

(a) *Accredited investor.* "Accredited investor" will mean any person who comes within any of the following categories, or who the issuer reasonably believes comes within any of the following categories, at the time of the sale of the securities to that person:

(1) Any bank as defined in Section 3(a)(2) of the Act, or any savings and loan association or other institution as defined in Section 3(a)(5)(A) of the Act whether acting in its individual or fiduciary capacity; any broker or dealer registered pursuant to Section 15 of the Securities Exchange Act of 1934; any insurance company as defined in Section 2(13) of the Act; any investment company registered under the Investment Company Act of 1940 or a business development company as defined in Section 2(a)(48) of that Act; any Small Business Investment Company licensed by the U.S. Small Business Administration under Section 301(c) or (d) of the Small Business Investment Act of 1958; any plan established and maintained by a state, its political subdivisions, or any agency or instrumentality of a state or its political subdivisions for the benefit of its employees, if such plan has total assets in excess of $5,000,000; any employee benefit plan within the meaning of the Employee Retirement Income Security Act of 1974 if the investment decision is made by a plan fiduciary, as defined in Section 3(21) of such Act, which is either a bank, savings and loan association, insurance company, or registered investment adviser, or if the employee benefit plan has total assets in excess of $5,000,000 or, if a self-directed plan, with investment decisions made solely by persons that are accredited investors;

(2) Any private business development company as defined in Section 202(a)(22) of the Investment Advisers Act of 1940;

(3) Any organization described in Section 501(c)(3) of the Internal Revenue Code, corporation, Massachusetts or similar business trust, or partnership, not formed for the specific purpose of acquiring the securities offered, with total assets in excess of $5,000,000;

(4) Any director, executive officer, or general partner of the issuer of the securities being offered or sold, or any director, executive officer, or general partner of a general partner of that issuer;

(5) Any natural person whose individual net worth, or joint net worth with that person's spouse, at the time of his purchase exceeds $1,000,000;

NOTE

For purposes of calculating net worth under this paragraph:

a) The Investor's primary residence will not be included as an asset;

b) Indebtedness that is secured by the Investor's primary residence, up to the estimated fair market value of the primary residence at the time of the sale of the Units, will not be included as a liability (except that if the amount of such indebtedness outstanding at the time of the sale of the Units exceeds

the amount outstanding 60 days before such time, other than as a result of the acquisition of the primary residence, the amount of such excess will be included as a liability); and

c) Indebtedness that is secured by the Investor's primary residence in excess of the estimated fair market value of the primary residence at the time of the sale of the Units will be included as a liability.

(6) Any natural person who had an individual income in excess of $200,000 in each of the two most recent years or joint income with that person's spouse in excess of $300,000 in each of those years and has a reasonable expectation of reaching the same income level in the current year;

(7) Any trust, with total assets in excess of $5,000,000, not formed for the specific purpose of acquiring the securities offered, whose purchase is directed by a sophisticated person as described in § 230.506(b)(2)(ii); and

(8) Any entity in which all of the equity owners are accredited investors.