

KEVIN ANDREW REYNOLDS, Ph.D.
Curriculum Vitae

Portland State University, P.O Box 751, Portland, Oregon 97207-0751

OBJECTIVE University administrator with wide-ranging experience and extensive record of collaborative accomplishments seeking presidential opportunity

HIGHLIGHTS OF QUALIFICATIONS

- Passionate advocate for the role of higher education impacting individual lives and communities
- Extensive experience of all aspects of university finances and operations
- Broad knowledge of academic affairs, and both undergraduate and graduate education
- Experience with domestic and international enrollment and financial aid leveraging
- Seasoned researcher with over 100 publications and 25 years of research support
- Track record of revenue generation through partnerships, sponsorships, retail, leasing, grants and philanthropy
- Collaborative leader who has built diverse, highly functioning teams and improved overall employee engagement
- Accomplished public speaker representing higher education in the legislative process
- Cabinet level experience in the development and implementation of strategic plans
- Respected and trusted communicator with Boards of Trustees and the university constituencies
- Data-driven decision maker who has successfully steered a university through multiple years of budget reductions
- Supporter of the arts, cultural events and athletics
- Champion of educational and operational innovation at a university

PROFESSIONAL EXPERIENCE

Vice President, Finance & Administration, Portland State University (2014 to present)

As the Chief Financial Officer for Portland State University, the Vice President is a member of the President's executive committee and is responsible for managing all aspects of the university's \$590 million budget, its physical campus of over 51 building (5 million square feet) on 41 acres in Downtown Portland, its technology infrastructure, and its human resources.

Duties include:

- Leadership of the institutional budget development and management process
- Management of fiscal operations ensuring integrity and accuracy of institutional financial transactions and reporting
- Long-range financial planning that considers trends, institutional strengths, and contingencies for market or other financial threats
- Management of the university's risks and emergency preparedness

- Oversee all of the university technology needs with a robust campus infrastructure that includes networks, telecommunications, servers and data storage, email and web services, and labs and classroom technologies
- Responsibility for campus safety and the campus public safety office
- Oversee Campus Recreation, Student Union, and Conferencing and Events Operations,
- Leadership of the acquisition, construction, financing, and maintenance of all campus buildings and grounds
- Collaboration with the City of Portland, business leaders, and civic organizations concerned with maintaining the vibrancy of downtown Portland
- Leadership of human resources systems, policies and procedures affecting recruitment, hiring, benefits, and payroll for the university's 6,800 employees

Selected accomplishments include:

- Development of a new Student Success and Completion funding model for higher education in Oregon which recognizes PSU's critical role in graduating Oregon's socioeconomically disadvantaged students
- In partnership with the six other Oregon public universities and the Higher Education Coordinating Commission (HECC), obtained increased state funding for higher education for 3 consecutive biennia. In combination with a new funding formula, state support for PSU grew from \$66 to almost \$100 million over 6 years. This increase allowed PSU to make investments in new faculty and advisers and moderate tuition increases
- Balanced the university's budget after 3 years of deficits, rebuilt central reserves by \$33 million, and developed a reserves policy approved by the Board of Trustees in June 2016 to protect the university from financial risks
- Built a collaborative, diverse, committed leadership team who manage over 400 people throughout the division
- Champion of data-driven analysis and decision-making to impact the university's students, staff and faculty, including: student debt analysis to evaluate and understand the problem and develop specific university actions to alleviate the financial burden students confront; stress-testing models to demonstrate the impact of various risks facing the university; approaches to recruit and retain a more diverse group of faculty and staff
- Improved employee engagement in the division of Finance & Administration through a focus on communication, manager training, and commitment to professional development; The PSU information technology (IT) department was recognized in 2017 and 2018 by computerworld in the top 100 best places to work in IT; Introduced yearly awards in recognition of outstanding classified staff
- Provided PSU leadership from initial concept to building occupancy for the \$295 million Skourtes tower-Collaborative Life Sciences Building in Portland's South Waterfront (a collaboration with Oregon Health & Science University and Oregon State University) including: designing the space to support engaged science pedagogy; faculty hiring to encourage inter-institutional collaborations; development of logistical strategies to manage the project's transportation, scheduling, and student support services issues
- Led the university through 2 biennia of legislative capital funding requests, in which

PSU scored as the top capital project for public universities including a \$70 million renovation for a building which houses core departments of the College of Liberal Arts and Sciences and a \$102 million new 7-story building to house the Graduate School of Education and the School of Public Health

- Oversaw completion, and fund raised for, a new \$52 million athletic facility
- Achieved a balanced budget for the university athletics department
- Initiated, (with approval of the Board of Trustees) and implemented a campus police department to enhance the safety and security of Portland State's students, staff and faculty

Related civic partnerships, statewide responsibilities and volunteer work include:

- Portland Mall Management Incorporated, Executive Committee (2015-)
- Portland Development Commission, Financial Sustainability Committee, Member (2016)
- College Affordability and Success Coalition, Member (2016-2018)
- Chair, Oregon Council of University Vice Presidents of Finance and Administration (2017-2019)
- Chair, University Shared Services Enterprise (2017-)
- Willamette Sail Club, Treasurer (2017-)

Interim Vice President, Research and Strategic Partnerships, Portland State University, (2016 – 2017)

The Vice President for Research and Strategic Partnerships is a member of the President's executive committee leading all aspects of sponsored research at the University as well as university strategic partnerships with a staff of 47. Responsibilities include sponsored programs administration, research compliance and integrity, and innovation and intellectual property. Initiatives included active support for expansion of the university's \$65 million sponsored research program through adoption of cloud-based sponsored projects administration software, improvements in sponsored programs administration, survey of HIPAA compliant practices, and creation of a strategic plan to guide further expansion of targeted sponsored research activities.

Vice Provost, Portland State University (2010 to 2014)

As a Vice Provost for several functional areas, served as a key academic leader for online learning, non-credit continuing education programs, extended campus programs, the Office of International Affairs (responsibilities for international student visas, advising, education abroad, transnational exchange programs, the Middle East Study Center, the Institute for Asian Studies, and the Confucius Institute), academic budget and planning for the schools and colleges.

Selected accomplishments include:

- Provided leadership for creation of the university's performance based budgeting process, including a unique tool for evaluating the financial performance of academic units, the Revenue and Cost Attribution Tool.

- Initiated a review of the School of Extended Studies' structure, and subsequently dissolved the school placing control of Summer Session and other credit-bearing programs to the appropriate academic units, while restructuring the professional development/continuing education program into a self-supporting unit in the School of Business Administration. The restructure produced approximately \$2 million in recurring annual savings.
- Co-initiated "reTHINK PSU", a presidential initiative aimed to serve more students with better outcomes, while containing costs through curricular innovation, community engagement and effective use of technology.
- Expanded Portland State University's international partnerships, notably in China and Turkey. This work supported the university's goal to growing international student enrollment to provide a vibrant, multicultural campus climate, opportunities for PSU students to study abroad, and to diversify revenue streams.

Chemistry Department Chair, Portland State University, (2005-2010)

- Developed and implemented a strategy which led to an eight-fold increase in annual sponsored research expenditures over five years.
- Recruited a diverse group of tenured and tenure-track faculty to Portland State University with a focus on building research collaborations with Oregon Health Sciences University and the Portland Art Museum.
- Provided leadership for creation of the Oregon Translational Research and Development Institute (OTRADI), a successful bioscience incubator supporting scientific innovation.

PROFESSIONAL DEVELOPMENT

Academy for Innovative Higher Education Leadership, 2015-2016 : This program spans a year and was assembled by the Presidents of Arizona State University and Georgetown University. It is designed to fill the void for transformative leaders in higher education and as the premier training ground for those who aspire to senior leadership positions and want to lead organizational change at colleges and universities in the future.

(<https://georgetown.asu.edu/about>)

ACADEMIC APPOINTMENTS

- Professor, Department of Chemistry, Portland State University (2005- present)
- Professor, Medicinal Chemistry Department, School of Pharmacy, Virginia Commonwealth University (2001-2005)
- Associate Professor, Medicinal Chemistry Department, School of Pharmacy,, Virginia Commonwealth University (1997-2001)
- Adjunct Faculty, School of Medicine, Department of Microbiology, Virginia Commonwealth University (2000-2005)
- Associate Professor, Pharmaceutical Sciences Department, School of Pharmacy, Department of Pharmaceutical Sciences, University of Maryland, Baltimore (1994-1997)
- Assistant Professor, Pharmaceutical Sciences Department, School of Pharmacy,

University of Maryland, Baltimore (1989-1994)

- Postdoctoral Research Associate, Chemistry, Ohio State University (1988-1989)
- Postdoctoral Research Associate, Chemistry, University of Washington (1987)

EDUCATION

- University of Southampton, England, Ph.D. in Chemistry (1987)
Dissertation: Biosynthesis of the polyether antibiotic monensin-A: Studies on a rearrangement linking isobutyryl-CoA and n-butyryl-CoA
- University of Southampton, England, B.S. in Chemistry, Honors (1984)

RESEARCH

Research Expertise

- Bacterial natural products which find human health applications (most notably as antibiotics), as well as in agriculture and veterinary medicine. For a range of natural products pathways we have taken a multidisciplinary approach to discover the genes which encode the pathway, the processes which prove the building blocks, the ordering of assembly and the biochemistry of the key steps in the process. This work has led to discovery of new catalytic functions, methods for altering product ratios and increasing natural product yields in fermentation processes. The work has also focused on creating new compounds that are either inspired by natural product skeletons but made synthetically or created by genetic engineering through the creation of hybrid and blocked pathways.
- Fatty acid biosynthetic pathways. The predominant focus has been processes in pathogens such as *Mycobacterium tuberculosis*, *Plasmodium falciparum* and *Staphylococcus aureus* (causative agents of tuberculosis, malaria and the leading cause of bacterial infections in humans, respectively).

Research Collaborations

- Academic: University of Warwick (UK), Durham University (UK), Ludwig Maximilians University of Munich (Germany), Riken (Japan), University of Minnesota (US), University of San Diego (US), Scripps Oceanographic Institute (US), University of Arizona (US), Oregon Health Sciences University (US)
- Companies: Eli Lilly, Pfizer, Abbott Laboratories, LS9
- Other: Walter Reed Army Institute for Research, National Institute for Allergies and Infectious Diseases

Selected Research Accomplishments

- Creation of natural-product inspired tambjamine structures that can cure malaria in a mouse model in a single oral dose. This work, which was published in the Journal of Medicinal Chemistry, and garnered local, national, and international interest. The Medicines for Malaria Venture (MMV) and Glaxo Smith Kline have completed a

- number of preclinical evaluations in both the US and Europe.
- Development of a scintillation proximity assay for an enzyme called 3-ketoacyl ACP synthase III, a bacterial and parasitic drug target. This work was published in the Journal Analytical Biochemistry and was patented. The invention was used in the pharmaceutical industry to screen their chemical libraries for inhibitors and new drug development leads.
- Construction of a genetic engineered strain of *Streptomyces avermitilis* which produces doramectin (Dectomax), a veterinary drug used worldwide for the treatment of parasites in cattle. This work was published in the journal Nature Biotechnology, an invention disclosure was filed and the technology was evaluated by Pfizer as an alternative method of Dectomax production.

Recognition

- Elected Fellow of the Society for Industrial Microbiology and Biotechnology in recognition of “distinguished career accomplishments and dedication to the advancement of the applied microbiology sciences” (2016)
- Over 20 years of invited presentations in the US (meetings of the American Chemical Society, American Society of Microbiology, Society for Industrial Microbiology and Technology, American Society for Pharmacognosy) and overseas (China, Japan, Australia, Egypt, Germany, Spain, Israel, UK) (see appendix)
- Invited presentations and consultant for pharmaceutical and biotechnology companies (Syngenta, Dow Agro, Eli Lilly, Pfizer, Cubist, LS9, Glaxo Smith Kline, Molichem, Schering Plough)

Selected Recent Publications

See appendix for complete list of 113 publications from 1987-2016 with over 3500 citations.

- Kancharla, P.; Bonnett, S.; Reynolds, K.A. Stenotrophomonas maltophilia OleC Catalyzed ATP-Dependent Formation of Long Chain Z-Olefins from 2-Alkyl-3-hydroxyalkanoic Acids. *ChemBioChem* **2016**, *17* (15), 1426-1429
- Singh, R.; Reynolds, K. A. Identification and Characterization of FabA from the Type II Fatty Acid Synthase of *Streptomyces coelicolor*. *J. Nat. Prod.* **2016**, *79* (1), 240-243
- Kancharla, P.; Kelly, J. X.; Reynolds, K. A. Synthesis and Structure–Activity Relationships of Tambjamines and B-Ring Functionalized Prodiginines as Potent Antimalarials. *J. Med. Chem.* **2015**, *58* (18), 7286-7309
- Polikanov, Y. S.; Starosta, A. L.; Juette, M. F.; Altman, R. B.; Terry, D. S.; Lu, W.; Burnett, B. J.; Dinos, G.; Reynolds, K. A.; Blanchard, S. C. Distinct tRNA accommodation intermediates observed on the ribosome with the antibiotics hygromycin A and A201A. *Mol. Cell* **2015**, *58* (5), 832-844
- Singh, R.; Reynolds, K. A. Characterization of FabG and FabI of the *Streptomyces coelicolor* Dissociated Fatty Acid Synthase. *ChemBioChem* **2015**, *16* (4), 631-640

Funding

See appendix for list and details.

- Recipient of approximately \$16 million of research grant funding by the Federal Government and Pharmaceutical Companies
- Continuously funded as a Principal Investigator by federal government for 19 years
- Most recent support (through 2016) - two grants from the National Institutes for Health “Phoslactomycins: Biosynthesis and activity” and “Hygromycin A: Activity, biosynthesis, export, resistance”
- National Institutes of Health, “ Novel Multiple Stage Active Antimalarials” \$3,500,000 Total Costs, P.I. K. A. Reynolds and J. Kelly, proposed start date July 7th, 2019 (this grant received a score in the top 6% and seems likely to be funded)

Service

- Society for Industrial Microbiology (SIM). Board member (2009-2011). Program Chair, Annual Meeting, Minneapolis (2003). Program Co-Chair + Session Chair Annual meetings (2000, 2003-2009)
- Journal Reviewer (examples only): Proc. Natl. Acad. Sci.; Science, J. Nat. Prod.; Antimicrob. Agents Chemother.; J. Amer. Chem. Soc.; J. Chem. Soc., Chem. Commun; Microbiology; J. Indus. Microbiol.; Gene; ChemBioChem; J. Org. Chem; Appl. Environ. Microbiol.; J. Bacteriol; Chem. and Biol, Bioorganic Chemistry; Med. Chem. Research
- Grant reviewer: National Science Foundation; National Institutes of Allergies and Infectious Diseases; National Cancer Institute; National Institutes of Health

TEACHING/MENTORING

- Adviser over 20 years to 19 master’s and doctoral students from Egypt, Zimbabwe, India, Pakistan, China, Japan and the US. Students have graduated and are employed in industry (including numerous pharmaceutical and biotechnology companies, as well as Nike, Intel), and as faculty members at universities in both the US and overseas
- Provided research opportunities and experiences for undergraduates who have gone on to graduate school, medical school, and industry
- Postdoctoral fellows and visiting scientists: provided training and research opportunities for over 20 years to scientists from Jordan, Egypt, India, Japan, Russia, Malaysia, Russia, Japan, and the US
- Undergraduate and graduate teaching experience in biochemistry, drug design, medicinal chemistry, nutrition, enzyme mechanisms and natural product biosynthesis

REFERENCES

Available upon request

APPENDIX

Patents

- Reynolds, K. A., Papireddy, K, and Kelly, K: Tambjamines and functionalized prodiginines. Full patent filed April 2016
- Reynolds, K. A and He, X: Development of a scintillation proximity assay for 3-ketoacyl-ACP Synthase III. full patent application filed January 2001. Issued 2002
- Reynolds, K. A.: The CHC biosynthetic genes and their functional expression in a heterologous host. full patent application filed (March 2000)

Research Funding History

- National Institutes of Health, “Phoslactomycins: Biosynthesis and activity”, July 2011-June 2015 (no cost extension 2016) \$1,782,000 Total Costs, P.I. K.A. Reynolds
- National Institutes of Health, “Hygromycin A: Activity, biosynthesis, export, resistance and regulation”, September 2011-October 2015 (no cost extension 2016), \$1,202,000 Total Costs, P.I. K. A. Reynolds
- National Institutes of Health, “Deciphering the steps of prodiginine biosynthesis”, June, 2007-May 2012, \$1,600,000 Total Costs, P.I. K.A. Reynolds
- National Institutes of Health, “Prodiginines as antimalarials”, June 2009-May 2012, \$415,000 Total Costs, P.I. K. A. Reynolds
- National Institute of Allergies and Infectious Diseases, “3-Ketoacyl ACP synthase III: A novel antibiotic target” March 2003-February 2009 \$1,500,000 Total Costs, P.I. K.A. Reynolds
- National Institutes of Health, “Molecular analysis of modular polyketide synthases”, January 2005-July 2010, \$2,793,237 Total Costs P.I. David Sherman. \$1,384,355, subcontract P.I. K.A. Reynolds
- National Science Foundation, “Acquisition of a mass spectrometer at PSU”, February 2008-March 2010, \$367,000 Total Costs, P.I. K.A. Reynolds
- M. Miller Foundation, “Renewable petroleum”, Jan 2009-Dec 2010, \$41,000 Total Costs, P.I. K. A. Reynolds
- National Institutes of Health, “Cyclohexanecarboxylic acid and polyketide biosynthesis, May 2002-August 2008, \$1,305,000 Total Costs, P.I. K.A. Reynolds
- National Institutes of Health, “High flux X-ray data collection system”, May 2004-June 2005 \$500,000 P.I. H. T. Wright, co P.I. K.A. Reynolds
- M. J. Murdock Charitable Trust, “Acquisition of a nuclear magnetic resonance spectrometer”, Dec, 2006-Nov, 2008. \$450,000 P.I. D. Peyton
- National Institutes of Health, “Engineering precursor supply for polyketide biosynthesis”, August 2000-July 2004, \$1,148,480 Total Costs, P.I. K.A. Reynolds
- National Institutes of Health, “Combinatorial biosynthesis and the pikromycin pathway”, September 1999-August 2004, \$617,823 Total Costs to K.A. Reynolds (P.I. University of Minnesota D.H. Sherman)
- Pfizer Incorporated, “Hygromycin A Biosynthesis”, September 2001-August 2003, \$397,950 Total Costs, P.I. K.A. Reynolds
- Eli Lilly, “Precursor Supply and Monensin Biosynthesis”, September 2000-August 2003, \$145,000 Total Costs, P.I. K.A. Reynolds

- National Institute of Allergies and Infectious Diseases. "KASIII a target for novel antibiotics" September 1999-August 2002, \$217,000 Total Costs, P.I. K.A. Reynolds
- National Institutes of Health "Engineered biosynthesis of novel ketolide antibiotics" July, 2000-June 2001, \$166,303 Total Costs, P.I. K. A. Reynolds
- Pfizer Incorporated, "Engineering CHC-CoA biosynthesis specifically for doramectin production in *Streptomyces avermitilis*", September 2000-August 2002, \$128,250 Total Costs, P.I. K.A. Reynolds
- National Institutes of Health, "Butyrate metabolism in streptomyces" August 1996-July 2000, \$769,071 Total Costs, P. I. K.A. Reynolds
- National Science Foundation, "The shikimic acid pathway and polyketide biosynthesis" March 1998- February 2001, \$309,000 Total Costs, P.I. K.A. Reynolds
- Abbott Laboratories, "Production of novel erythromycins by engineering of the 6-deoxyerythronolide B synthase" January 1998 - December 1998, \$68,000 Total Costs P.I. K.A. Reynolds
- Pfizer Incorporated, "Purification and characterization of the acyl CoA:ACP transacylase involved in fatty acid biosynthesis in streptomyces" July 1997-December 1999, \$165,000 Total Costs, P.I. K.A. Reynolds
- National Science Foundation, "Tracing the origins of stereochemical and metabolic diversity in secondary metabolism in streptomycetes" March 1995- February 1998, \$298,000 Total Costs, P.I. K. A. Reynolds
- National Science Foundation, "Sulochrin oxidases" June 1996-December 1996, \$15,394 Total Costs, P. I. K. A. Reynolds
- Pfizer Inc. "Genetic and biochemical studies of the formation of the substituted cyclohexyl moiety of the immunosuppressant FK520 by *S. hygroscopicus*" January 1994-July 1996, \$91,000 Total Direct Costs, P.I. K. A. Reynolds.
- National Institutes of Health "Biosynthesis of fatty acids in bacteria and fungi" August 1994-July 1996, \$187,000 Total Costs, P.I. K. A. Reynolds
- National Science Foundation, "Evolution and origin of enzymes involved in secondary metabolism" July 1991- January 1995, \$180,000 Total Costs, P.I.s K.A. Reynolds and M. K. Speedie.
- NATO International Scientific Exchange Programme-Collaborative Research Grant, "Metabolism and enzyme studies in antibiotic producing streptomyces", August 1993-July 1994, \$ 5,000 Total Costs, P.I.s K.A. Reynolds and D. O'Hagan
- National Foundation for Infectious Diseases, "Studies on the putative pharmacophore cyclohexane moiety of ansatrienin", May 1990-May 1991; \$2000 Matching Funds. P.I. K.A. Reynolds
- American Society of Pharmacognosy, "Studies of the enzymes involved in the bioconversion of shikimic acid to cyclohexanecarboxylic acid", July, 1990- June, 1991. \$2,500 Total Costs, P.I. K.A. Reynolds
- Biomedical Research Support Grant, University of Maryland School of Pharmacy, "An enzymic approach to understanding macrolide and polyether biosynthesis", July, 1990 - June, 1991, \$4,000 Total Costs, P.I. K.A. Reynolds
- Special Research Initiative Support, University of Maryland at Baltimore, "Studies on the biosynthesis of the cyclohexanecarboxylic acid moiety of the antibiotic ansatrienin produced by *Streptomyces collinus*", July, 1990 - June, 1991, \$10,000 Total Costs, P.I. K.A. Reynolds
- Special Research Initiative Support, University of Maryland at Baltimore, "Biosynthetic pathway enzymes: Structure-function and origin", July, 1991-June,

1992, \$13,400 Total Costs, P.I. K.A. Reynolds

Selected Invited Presentations

- Annual Meeting National Association of College University Business Officers, Montreal, Canada 2016
- Annual Meeting Society Society College University Planning, Chicago, 2015
- Northwest Regional Meeting of the American Chemical Society, Corvallis 2013
- Zing Natural Products Meeting, Canary Islands, February 2011
- International Conference of Natural Products Biosynthesis, Japan, June 2011
- International Chemical Congress of Pacific Basin Societies. Honolulu, Hawaii, December 2010
- Society of Industrial Microbiology Annual Meeting, San Francisco, July 2010.
- Society of Industrial Microbiology Annual Meeting, San Diego, August 2008
- American Chemical Society Annual Meeting, New Orleans, April 2008
- 4th Takeda Science Foundation Symposium on PharmaSciences, Takeda Science Foundation, Tokyo, Japan, December 2007
- International Society for Biotechnology of Actinomycetes (ISBA) meeting, Newcastle, England, Aug. 2007
- Annual Society for Microbiology Annual Meeting, May 21-25, Denver, July 2007
- Society of Industrial Microbiology Annual Meeting, Baltimore, MD, July 2006
- International Chemical Congress of Pacific Basin Societies. Honolulu, Hawaii, December 2005
- Society of Industrial Microbiology Annual Meeting, Chicago, Illinois, August 2005
- American Chemical Society National Meeting, San Diego, March, 2005
- Combined BNP-GMBIM Meeting of the Society of Industrial Microbiology, San Diego CA, November, 2004
- 155th Society for General Microbiology (SGM) Trinity College, Dublin Ireland, September 2004
- Society of Industrial Microbiology Annual Meeting, Anaheim CA, July 2004.
- International Society for Biotechnology of Actinomycetes (ISBA) meeting, Melbourne Australia, Dec. 2003
- Society of Industrial Microbiology Annual Meeting, Minneapolis, MN Oct. 2003.
- Biotechnology Natural Products Meeting, Hawaii, October 2002
- Polyketides III, Bristol, England September 2001
- International Society for Biotechnology of Actinomycetes (ISBA) meeting, Vancouver BC, Canada, July 2001
- 6th US-Japan Seminar on Biosynthesis, Girdwood, Alaska, June, 2001.
- International Chemical Congress of Pacific Basin Societies. Honolulu, Hawaii, December, 2000
- Genetics and Molecular Biology of Industrial Microorganisms Meeting, Bloomington, Indiana, Sept. 2000.
- Society of Industrial Microbiology Annual Meeting, San Diego, California, July, 2000.
- International Society for Biotechnology of Actinomycetes (ISBA) meeting, Crete, Greece, October 1999
- Society of Industrial Microbiology Annual Meeting, Arlington, Virginia, August, 1999
- International Symposium on the Genetics of Industrial Microorganisms, Jerusalem,

June, 1998

- Society of Industrial Microbiology Annual Meeting, Denver, Colorado, August, 1998
- Society of Industrial Microbiology Annual Meeting, Reno, Nevada, August, 1997
- 5th US-Japan Seminar on Biosynthesis, Winthrop, Washington, June 1997
- International Society on the Biology of Actinomycetes, Beijing, China, June, 1997
- International Conference on the Chemistry and Biochemistry of Polyketide and Fatty Acid Biosynthesis, Bristol, England, May 1996
- Reynolds, K. A.: Fatty Acid Biosynthesis in Streptomyces. Noble Foundation Meeting on 3-Ketoacyl Synthases, Puerto Rico, USA, July 1996
- Society of Industrial Microbiology Annual Meeting, San Jose, California, August, 1995
- International Conference Biological Challenges for Organic Chemistry, St Andrews, Scotland, July, 1995
- International Chemical Congress of Pacific Basin Societies. Honolulu, Hawaii, December, 1995

Selected Invited Presentations - Industry and Universities

- Oregon State University, Microbiology Student Association, Corvallis 2016
- Animal Products Division, Eli Lilly and Company, Indianapolis, Indiana 2009
- Gene Center, University of Munich, Munich, Germany 2008
- Hans-Knoll-Institut für Naturstoff-Forschung, Jena, Germany 2008
- Department of Biology, Ohio University 2008
- LS9, California 2007
- Department of Chemistry, Warwick University, England 2007
- Department of Chemistry, University of Nebraska Lincoln 2006
- Department of Chemistry, Vanderbilt University, Nashville, Tennessee 2005
- Department of Environmental and Biomolecular Systems at the OGI School of Science and Engineering, Portland, Oregon 2005
- America Type Culture Collection, (ATCC), Manassas, Va 2005
- Department of, Oregon Health Science University, Portland, Oregon 2005
- Department of Pharmaceutical Sciences, Oregon State University 2005
- Antimicrobials Division, Pfizer Global R and Development, Groton CT 2004
- Antimicrobials Division, Pfizer Global R and Development, Groton CT 2003
- School of Pharmacy, University of Kentucky, Lexington, Ky 2002
- School of Pharmacy, University of Arizona, Tucson, Arizona 2002
- GlaxoSmithKline, Biochemistry, Microbial, Musculoskeletal and Proliferative Diseases CEDD, King of Prussia, Pennsylvania 2001
- Animal Products Division, Eli Lilly and Company, Indianapolis, Indiana 2001
- Department of Chemistry, University of Montana 2000
- Schering Plough, Kenilworth, New Jersey 2000
- DowAgro Sciences, Indianapolis, Indiana 2000
- Animal Products Division, Eli Lilly and Company, Indianapolis, Indiana 1999
- Merck Natural Products Group, Rahway, New Jersey 1999
- Kosan BioSciences, Orinda, California 1999

Dissertations and Theses Supervised

- Karen Chichetu, Portland State University, Characterization, DNA binding and cleavage activities of new prodigiosin and tambjamine analogues and their Cu²⁺ and Zn²⁺ complexes, 2015 (Ph.D. thesis)
- Renu Singh, Portland State University, Enzymatic control of the related pathways of fatty acid and undecylprodiginine biosynthesis in *Streptomyces coelicolor*, 2015 (Ph.D. thesis)
- Patience Marimo, Portland State University, Steps towards deciphering the post-polyketide synthase tailoring steps in the phoslactomycin biosynthesis pathway, 2015 (master's thesis)
- Shaimaa M. Salem, Portland State University, Biosynthesis of marineosin, a spiroaminal undecylprodiginine natural product, 2012 (Ph.D. thesis)
- John K. Yan, Portland State University, Functional separation of multimodular type I PKS polypeptides by utilizing matched docking domains from a heterologous PKS system, 2010 (Ph.D. thesis)
- Jessica Dibari, Portland State University, Antifungal activity of phoslactomycins from *Streptomyces* sp. HK-803, 2010 (master's thesis)
- Vidya Dhote, Portland State University, Characterization of putative self-resistance genes in the biosynthetic gene cluster of hygromycin A from *Streptomyces hygrosopicus* NRRL 2388, 2009 (Ph.D. thesis)
- Chaoxuan Li, Virginia Commonwealth University, Precursor supply and polyketide antibiotic biosynthesis in industrial oil-based fermentations of *Streptomyces cinnamonensis*, 2007 (Ph.D. thesis)
- Sarbjot S. Sachdeva, Virginia Commonwealth University, Interactions of mtFabH with its substrates and inhibitors reveal novel mechanistic insights, 2007 (Ph.D. thesis)
- Suparna D. Choudhuri, Virginia Commonwealth University, Stability study of phoslactomycin B and analysis of degradation products, 2005 (master's thesis)
- T. Ashton Cropp, Virginia Commonwealth University, Combinatorial biosynthesis of polyketide natural products, 2002 (Ph.D. thesis)
- Xin He, Virginia Commonwealth University, Discovery of novel inhibitors of β -ketoacyl-acyl carrier protein synthase III (FabH), 2002 (Ph.D. thesis)
- Shuo Chen, Virginia Commonwealth University, Control of molecular diversity in type 1 polyketide antibiotic biosynthesis, 2000 (Ph.D. thesis)
- Sandra Lobo, University of Maryland at Baltimore, Analysis of the role of an acetoacetyl CoA thiolase with a novel acetyl CoA:ACP transacylase activity in the initiation of straight chain fatty acid biosynthesis in *Streptomyces collinus*, 2000 (Ph.D. thesis)
- Stephanie Patton, University of Maryland Baltimore, 2000 (Ph.D. thesis)
- Kimberlee Kaye Wallace, Butyrate metabolism in *Streptomyces*, 1996 (Ph.D. thesis)
- Wilson Daniel, University of Maryland at Baltimore (master's thesis)
- Haibin Lin, University of Maryland at Baltimore (Ph.D. thesis)
- Pei Wang, University of Maryland at Baltimore (Ph.D. thesis)

Peer Reviewed Publications

- Kancharla, P.; Bonnett, S.; Reynolds, K.A. Stenotrophomonas maltophilia OleC Catalyzed ATP-Dependent Formation of Long Chain Z-Olefins from 2-Alkyl-3-hydroxyalkanoic Acids. *ChemBioChem* 2016, 17 (15), 1426-1429.

- Singh, R.; Reynolds, K. A. Identification and Characterization of FabA from the Type II Fatty Acid Synthase of *Streptomyces coelicolor*. *J. Nat. Prod.* 2016, 79 (1), 240-243.
- Kancharla, P.; Kelly, J. X.; Reynolds, K. A. Synthesis and Structure–Activity Relationships of Tambjamines and B-Ring Functionalized Prodiginines as Potent Antimalarials. *J. Med. Chem.* 2015, 58 (18), 7286-7309.
- Polikanov, Y. S.; Starosta, A. L.; Juette, M. F.; Altman, R. B.; Terry, D. S.; Lu, W.; Burnett, B. J.; Dinos, G.; Reynolds, K. A.; Blanchard, S. C. Distinct tRNA accommodation intermediates observed on the ribosome with the antibiotics hygromycin A and A201A. *Mol. Cell* 2015, 58 (5), 832-844.
- Singh, R.; Reynolds, K. A. Characterization of FabG and FabI of the *Streptomyces coelicolor* Dissociated Fatty Acid Synthase. *ChemBioChem* 2015, 16 (4), 631-640.
- Kancharla, P.; Lu, W.; Salem, S. M.; Kelly, J. X.; Reynolds, K. A. Stereospecific Synthesis of 23-Hydroxyundecylprodiginines and Analogues and Conversion to Antimalarial Premarinesins via a Rieske Oxygenase Catalyzed Bicyclization. *J. Org. Chem.* 2014, 79 (23), 11674-11689.
- Salem, S. M.; Kancharla, P.; Florova, G.; Gupta, S.; Lu, W.; Reynolds, K. A. Elucidation of final steps of the marinesins biosynthetic pathway through identification and characterization of the corresponding gene cluster. *J. Am. Chem. Soc.* 2014, 136 (12), 4565-4574.
- Bonnett, S. A.; Whicher, J. R.; Papireddy, K.; Florova, G.; Smith, J. L.; Reynolds, K. A. Structural and stereochemical analysis of a modular polyketide synthase ketoreductase domain required for the generation of a cis-alkene. *Chem. Biol.* 2013, 20 (6), 772-783.
- Kancharla, P.; Reynolds, K. A. Synthesis of 2, 2'-bipyrrole-5-carboxaldehydes and their application in the synthesis of B-ring functionalized prodiginines and tambjamines. *Tetrahedron* 2013, 69 (39), 8375-8385.
- Singh, R.; Mo, S.; Florova, G.; Reynolds, K. A. *Streptomyces coelicolor* RedP and FabH enzymes, initiating undecylprodiginine and fatty acid biosynthesis, exhibit distinct acyl-CoA and malonyl-acyl carrier protein substrate specificities. *FEMS Microbiol. Lett.* 2012, 328 (1), 32-38.
- Yan, J.; Hazzard, C.; Bonnett, S. A.; Reynolds, K. A. Functional modular dissection of DEBS1-TE changes triketide lactone ratios and provides insight into Acyl group loading, hydrolysis, and ACP transfer. *Biochemistry* 2012, 51 (46), 9333-9341.
- Bonnett, S. A.; Rath, C. M.; Shareef, A.-R.; Joels, J. R.; Chemler, J. A.; Håkansson, K.; Reynolds, K. A.; Sherman, D. H. Acyl-CoA subunit selectivity in the pikromycin polyketide synthase PikAIV: steady-state kinetics and active-site occupancy analysis by FTICR-MS. *Chem. Biol.* 2011, 18 (9), 1075-1081.
- Bonnett, S. A.; Papireddy, K.; Higgins, S.; del Cardayre, S.; Reynolds, K. A. Functional characterization of an NADPH dependent 2-alkyl-3-ketoalkanoic acid reductase involved in olefin biosynthesis in *Stenotrophomonas maltophilia*. *Biochemistry* 2011, 50 (44), 9633-9640.
- Kancharla, P.; Smilkstein, M.; Kelly, J. X.; Salem, S. M.; Alhamadsheh, M.; Haynes, S. W.; Challis, G. L.; Reynolds, K. A. Antimalarial activity of natural and synthetic prodiginines. *J. Med. Chem.* 2011, 54 (15), 5296-5306.
- Whicher, J. R.; Florova, G.; Sydor, P. K.; Singh, R.; Alhamadsheh, M.; Challis, G. L.; Reynolds, K. A.; Smith, J. L. Structure and function of the RedJ protein, a thioesterase from the prodiginine biosynthetic pathway in *Streptomyces coelicolor*. *J.*

- Biol. Chem.* 2011, 286 (25), 22558-22569.
- Buchholz, T. J.; Geders, T. W.; Bartley III, F. E.; Reynolds, K. A.; Smith, J. L.; Sherman, D. H. Structural basis for binding specificity between subclasses of modular polyketide synthase docking domains. *ACS Chem. Biol.* 2009, 4 (1), 41-52.
 - Dhote, V.; Starosta, A. L.; Wilson, D. N.; Reynolds, K. A. The final step of hygromycin A biosynthesis, oxidation of C-5"-dihydropyroglycin A, is linked to a putative proton gradient-dependent efflux. *Antimicrob. Agents Chemother.* 2009, 53 (12), 5163-5172.
 - Eustáquio, A. S.; McGlinchey, R. P.; Liu, Y.; Hazzard, C.; Beer, L. L.; Florova, G.; Alhamadsheh, M. M.; Lechner, A.; Kale, A. J.; Kobayashi, Y.; Reynolds, K. A.; Moore, B.; Khosla, C. Biosynthesis of the salinosporamide A polyketide synthase substrate chloroethylmalonyl-coenzyme A from S-adenosyl-L-methionine. *Proc. Natl. Acad. Sci. U.S.A.* 2009, 106 (30), 12295-12300.
 - Ghatge, M. S.; Palaniappan, N.; Ma'moun, M. A.; DiBari, J.; Reynolds, K. A. Application of a newly identified and characterized 18-O-acyltransferase in chemoenzymatic synthesis of selected natural and nonnatural bioactive derivatives of phoslactomycins. *Appl. Environ. Microbiol.* 2009, 75 (11), 3469-3476.
 - Li, C.; Hazzard, C.; Florova, G.; Reynolds, K. A. High titer production of tetracenomycins by heterologous expression of the pathway in a *Streptomyces cinnamonensis* industrial monensin producer strain. *Metab. Eng.* 2009, 11 (6), 319-327.
 - Liu, Y.; Hazzard, C.; Eustáquio, A. S.; Reynolds, K. A.; Moore, B. S. Biosynthesis of salinosporamides from α , β -unsaturated fatty acids: implications for extending polyketide synthase diversity. *J. Am. Chem. Soc.* 2009, 131 (30), 10376-10377.
 - Palaniappan, N.; Dhote, V.; Ayers, S.; Starosta, A. L.; Wilson, D. N.; Reynolds, K. A. Biosynthesis of the aminocyclitol subunit of hygromycin A in *Streptomyces hygrosopicus* NRRL 2388. *Chem. Biol.* 2009, 16 (11), 1180-1189.
 - Yan, J.; Gupta, S.; Sherman, D. H.; Reynolds, K. A. Functional dissection of a multimodular polypeptide of the pikromycin polyketide synthase into monomodules by using a matched pair of heterologous docking domains. *ChemBioChem* 2009, 10 (9), 1537-1543.
 - Alhamadsheh, M. M.; Waters, N. C.; Sachdeva, S.; Lee, P.; Reynolds, K. A. Synthesis and biological evaluation of novel sulfonyl-naphthalene-1, 4-diols as FabH inhibitors. *Bioorg. Med. Chem. Lett.* 2008, 18 (24), 6402-6405.
 - Dhote, V.; Gupta, S.; Reynolds, K. A. An O-phosphotransferase catalyzes phosphorylation of hygromycin A in the antibiotic-producing organism *Streptomyces hygrosopicus*. *Antimicrob. Agents Chemother.* 2008, 52 (10), 3580-3588.
 - Gupta, S.; Lakshmanan, V.; Kim, B. S.; Fecik, R.; Reynolds, K. A. Generation of novel pikromycin antibiotic products through mutasynthesis. *ChemBioChem* 2008, 9 (10), 1609-1616.
 - Mo, S.; Sydor, P. K.; Corre, C.; Alhamadsheh, M. M.; Stanley, A. E.; Haynes, S. W.; Song, L.; Reynolds, K. A.; Challis, G. L. Elucidation of the *Streptomyces coelicolor* pathway to 2-undecylpyrrole, a key intermediate in undecylprodiginine and streptorubin B biosynthesis. *Chem. Biol.* 2008, 15 (2), 137-148.
 - Palaniappan, N.; Alhamadsheh, M. M.; Reynolds, K. A. cis- Δ^2 , 3-Double bond of phoslactomycins is generated by a post-PKS tailoring enzyme. *J. Am. Chem. Soc.* 2008, 130 (37), 12236-12237.
 - Sachdeva, S.; Musayev, F.; Alhamadsheh, M. M.; Scarsdale, J. N.; Wright, H. T.;

- Reynolds, K. A. Probing reactivity and substrate specificity of both subunits of the dimeric *Mycobacterium tuberculosis* FabH using alkyl-CoA disulfide inhibitors and acyl-CoA substrates. *Bioorg. Chem.* 2008, 36 (2), 85-90.
- Sachdeva, S.; Musayev, F. N.; Alhamadsheh, M. M.; Scarsdale, J. N.; Wright, H. T.; Reynolds, K. A. Separate entrance and exit portals for ligand traffic in *Mycobacterium tuberculosis* FabH. *Chem. Biol.* 2008, 15 (4), 402-412.
 - Turos, E.; Revell, K. D.; Ramaraju, P.; Gergeres, D. A.; Greenhalgh, K.; Young, A.; Sathyanarayan, N.; Dickey, S.; Lim, D.; Alhamadsheh, M. M.; Reynolds, K. A. Unsymmetric aryl-alkyl disulfide growth inhibitors of methicillin-resistant *Staphylococcus aureus* and *Bacillus anthracis*. *Bioorg. Med. Chem.* 2008, 16 (13), 6501-6508.
 - Alhamadsheh, M. M.; Musayev, F.; Komissarov, A. A.; Sachdeva, S.; Wright, H. T.; Scarsdale, N.; Florova, G.; Reynolds, K. A., Alkyl-CoA disulfides as inhibitors and mechanistic probes for FabH enzymes. *Chem. Biol.* 2007, 14 (5), 513-524.
 - Alhamadsheh, M. M.; Palaniappan, N.; DasChouduri, S.; Reynolds, K. A. Modular polyketide synthases and cis double bond formation: establishment of activated cis-3-cyclohexylpropenoic acid as the diketide intermediate in phoslactomycin biosynthesis. *J. Am. Chem. Soc.* 2007, 129 (7), 1910-1911.
 - Alhamadsheh, M. M.; Waters, N. C.; Huddler, D. P.; Kreishman-Deitrick, M.; Florova, G.; Reynolds, K. A. Synthesis and biological evaluation of thiazolidine-2-one 1, 1-dioxide as inhibitors of *Escherichia coli* β -ketoacyl-ACP-synthase III (FabH). *Bioorg. Med. Chem. Lett.* 2007, 17 (4), 879-883.
 - Wright, H. T.; Reynolds, K. A. Antibacterial targets in fatty acid biosynthesis. *Curr. Opin. Microbiol.* 2007, 10 (5), 447-453.
 - Akopiants, K.; Florova, G.; Li, C.; Reynolds, K. A. Multiple pathways for acetate assimilation in *Streptomyces cinnamonensis*. *J. Ind. Microbiol. Biotechnol.* 2006, 33 (2), 141-150.
 - Ghatge, M.; Palaniappan, N.; Choudhuri, S. D.; Reynolds, K., Genetic manipulation of the biosynthetic process leading to phoslactomycins, potent protein phosphatase 2A inhibitors. *J. Ind. Microbiol. Biotechnol.* 2006, 33 (7), 589-599.
 - Li, C.; Akopiants, K.; Reynolds, K. A. Identification and disruptional analysis of the *Streptomyces cinnamonensis* msdA gene, encoding methylmalonic acid semialdehyde dehydrogenase. *J. Ind. Microbiol. Biotechnol.* 2006, 33 (2), 75-83.
 - Palaniappan, N.; Ayers, S.; Gupta, S.; Habib, E.-S.; Reynolds, K. A. Production of hygromycin A analogs in *Streptomyces hygrosopicus* NRRL 2388 through identification and manipulation of the biosynthetic gene cluster. *Chem. Biol.* 2006, 13 (7), 753-764.
 - Choudhuri, S. D.; Ayers, S.; Soine, W. H.; Reynolds, K. A. A pH-stability study of phoslactomycin B and analysis of the acid and base degradation products. *J. Antibiot.* 2005, 58 (9), 573-582.
 - Ghatge, M. S.; Reynolds, K. A. The plmS2-encoded Cytochrome P450 monooxygenase mediates hydroxylation of phoslactomycin B in *Streptomyces* sp. strain HK803. *J. Bacteriol.* 2005, 187 (23), 7970-7976.
 - Li, Y.; Florova, G.; Reynolds, K. A. Alteration of the fatty acid profile of *Streptomyces coelicolor* by replacement of the initiation enzyme 3-ketoacyl acyl carrier protein synthase III (FabH). *J. Bacteriol.* 2005, 187 (11), 3795-3799.
 - Mo, S.; Kim, B. S.; Reynolds, K. A. Production of branched-chain alkylprodiginines in *S. coelicolor* by replacement of the 3-ketoacyl ACP synthase III initiation enzyme,

- RedP. *Chem. Biol.* 2005, 12 (2), 191-200.
- Musayev, F.; Sachdeva, S.; Scarsdale, J. N.; Reynolds, K. A.; Wright, H. Crystal structure of a substrate complex of Mycobacterium tuberculosis β -ketoacyl-acyl carrier protein synthase III (FabH) with lauroyl-coenzyme A. *J. Mol. Biol.* 2005, 346 (5), 1313-1321.
 - He, X.; Reeve, A. M.; Desai, U. R.; Kellogg, G. E.; Reynolds, K. A. 1, 2-dithiole-3-ones as potent inhibitors of the bacterial 3-ketoacyl acyl carrier protein synthase III (FabH). *Antimicrob. Agents Chemother.* 2004, 48 (8), 3093-3102.
 - Kim, B. S.; Sherman, D. H.; Reynolds, K. A. An efficient method for creation and functional analysis of libraries of hybrid type I polyketide synthases. *Protein Eng., Des. Sel.* 2004, 17 (3), 277-284.
 - Li, C.; Florova, G.; Akopiants, K.; Reynolds, K. A. Crotonyl-coenzyme A reductase provides methylmalonyl-CoA precursors for monensin biosynthesis by Streptomyces cinnamomensis in an oil-based extended fermentation. *Microbiology* 2004, 150 (10), 3463-3472.
 - Beck, B. J.; Aldrich, C. C.; Fecik, R. A.; Reynolds, K. A.; Sherman, D. H. Iterative chain elongation by a pikromycin monomodular polyketide synthase. *J. Am. Chem. Soc.* 2003, 125 (16), 4682-4683.
 - Beck, B. J.; Aldrich, C. C.; Fecik, R. A.; Reynolds, K. A.; Sherman, D. H. Substrate recognition and channeling of monomodules from the pikromycin polyketide synthase. *J. Am. Chem. Soc.* 2003, 125 (41), 12551-12557.
 - Brown, M. S.; Akopiants, K.; Resceck, D. M.; McArthur, H. A.; McCormick, E.; Reynolds, K. A. Biosynthetic origins of the natural product, thiolactomycin: A unique and selective inhibitor of type II dissociated fatty acid synthases. *J. Am. Chem. Soc.* 2003, 125 (34), 10166-10167.
 - Habib, E.-S. E.; Scarsdale, J. N.; Reynolds, K. A. Biosynthetic origin of hygromycin A. *Antimicrob. Agents Chemother.* 2003, 47 (7), 2065-2071.
 - Palaniappan, N.; Kim, B. S.; Sekiyama, Y.; Osada, H.; Reynolds, K. A. Enhancement and selective production of phoslactomycin B, a protein phosphatase IIa inhibitor, through identification and engineering of the corresponding biosynthetic gene cluster. *J. Biol. Chem.* 2003, 278 (37), 35552-35557.
 - Prigge, S. T.; He, X.; Gerena, L.; Waters, N. C.; Reynolds, K. A. The initiating steps of a type II fatty acid synthase in Plasmodium falciparum are catalyzed by pfACP, pfMCAT, and pfKASIII. *Biochemistry* 2003, 42 (4), 1160-1169.
 - Sekiyama, Y.; Palaniappan, N.; Reynolds, K. A.; Osada, H. Biosynthesis of phoslactomycins: cyclohexanecarboxylic acid as the starter unit. *Tetrahedron* 2003, 59 (38), 7465-7471.
 - Beck, B. J.; Yoon, Y. J.; Reynolds, K. A.; Sherman, D. H., The hidden steps of domain skipping: macrolactone ring size determination in the pikromycin modular polyketide synthase. *Chem. Biol.* 2002, 9 (5), 575-583.
 - Cropp, T. A.; Kim, B. S.; Beck, B. J.; Yoon, Y. J.; Sherman, D. H.; Reynolds, K. A. Recent developments in the production of novel polyketides by combinatorial biosynthesis. *Biotechnol. Genet. Eng. Rev.* 2002, 19 (1), 159-174.
 - Florova, G.; Kazanina, G.; Reynolds, K. A. Enzymes involved in fatty acid and polyketide biosynthesis in Streptomyces glaucescens: role of FabH and FabD and their acyl carrier protein specificity. *Biochemistry* 2002, 41 (33), 10462-10471.
 - He, X.; Reynolds, K. A. Purification, characterization, and identification of novel inhibitors of the β -ketoacyl-acyl carrier protein synthase III (FabH) from

- Staphylococcus aureus*. *Antimicrob. Agents Chemother.* 2002, 46 (5), 1310-1318.
- Kim, B. S.; Cropp, T. A.; Florova, G.; Lindsay, Y.; Sherman, D. H.; Reynolds, K. A. An unexpected interaction between the modular polyketide synthases, erythromycin DEBS1 and pikromycin PikAIV, leads to efficient triketide lactone synthesis. *Biochemistry* 2002, 41 (35), 10827-10833.
 - Kim, B. S.; Cropp, T. A.; Beck, B. J.; Sherman, D. H.; Reynolds, K. A., Biochemical evidence for an editing role of thioesterase II in the biosynthesis of the polyketide pikromycin. *J. Biol. Chem.* 2002, 277 (50), 48028-48034.
 - Yoon, Y. J.; Beck, B. J.; Kim, B. S.; Kang, H.-Y.; Reynolds, K. A.; Sherman, D. H. Generation of multiple bioactive macrolides by hybrid modular polyketide synthases in *Streptomyces venezuelae*. *Chem. Biol.* 2002, 9 (2), 203-214.
 - Chen, S.; Roberts, J. B.; Xue, Y.; Sherman, D. H.; Reynolds, K. A. The *Streptomyces venezuelae* pikAV gene contains a transcription unit essential for expression of enzymes involved in glycosylation of narbonolide and 10-deoxymethynolide. *Gene* 2001, 263 (1), 255-264.
 - Cropp, A.; Chen, S.; Liu, H.; Zhang, W.; Reynolds, K.A. Genetic approaches for controlling ratios of related polyketide products in fermentation processes. *J. Ind. Microbiol. Biotechnol.* 2001, 27 (6), 368-377.
 - Liu, H.; Reynolds, K. A. Precursor supply for polyketide biosynthesis: the role of crotonyl-CoA reductase. *Metab. Eng.* 2001, 3 (1), 40-48.
 - Lobo, S.; Florova, G.; Reynolds, K. A. A *Streptomyces collinus* thiolase with novel acetyl-CoA: acyl carrier protein transacylase activity. *Biochemistry* 2001, 40 (39), 11955-11964.
 - Scarsdale, J. N.; Kazanina, G.; He, X.; Reynolds, K. A.; Wright, H. T. Crystal structure of the *Mycobacterium tuberculosis* β -ketoacyl-acyl carrier protein synthase III. *J. Biol. Chem.* 2001, 276 (23), 20516-20522.
 - Smirnova, N.; Reynolds, K.A. Branched-chain fatty acid biosynthesis in *Escherichia coli*. *J. Ind. Microbiol. Biotechnol.* 2001, 27 (4), 246-251.
 - Smirnova, N.; Reynolds, K. A. Engineered Fatty Acid Biosynthesis in *Streptomyces* by Altered Catalytic Function of β -Ketoacyl-Acyl Carrier Protein Synthase III. *J. Bacteriol.* 2001, 183 (7), 2335-2342.
 - Wilson, D. J.; Xue, Y.; Reynolds, K. A.; Sherman, D. H. Characterization and analysis of the PikD regulatory factor in the pikromycin biosynthetic pathway of *Streptomyces venezuelae*. *J. Bacteriol.* 2001, 183 (11), 3468-3475.
 - Zhang, W.; Reynolds, K. A. MeaA, a putative coenzyme B12-dependent mutase, provides methylmalonyl coenzyme A for monensin biosynthesis in *Streptomyces cinnamomensis*. *J. Bacteriol.* 2001, 183 (6), 2071-2080.
 - Chen, S.; Xue, Y.; Sherman, D. H.; Reynolds, K. A. Mechanisms of molecular recognition in the pikromycin polyketide synthase. *Chem. Biol.* 2000, 7 (12), 907-918.
 - Cropp, T. A.; Smogowicz, A. A.; Hafner, E. W.; Denoya, C. D.; McArthur, H. A.; Reynolds, K. A. Fatty-acid biosynthesis in a branched-chain α -keto acid dehydrogenase mutant of *Streptomyces avermitilis*. *Can. J. Microbiol.* 2000, 46 (6), 506-514.
 - Cropp, T. A.; Wilson, D. J.; Reynolds, K.A. Identification of a cyclohexylcarbonyl CoA biosynthetic gene cluster and application in the production of doramectin. *Nat. Biotechnol.* 2000, 18 (9), 980-983.
 - He, X.; Mueller, J. P.; Reynolds, K. A. Development of a scintillation proximity assay for β -ketoacyl-acyl carrier protein synthase III. *Anal. Biochem.* 2000, 282 (1),

- 107-114.
- Patton, S. M.; Cropp, T. A.; Reynolds, K. A. A Novel $\Delta 3$, $\Delta 2$ -Enoyl-CoA Isomerase Involved in the Biosynthesis of the Cyclohexanecarboxylic Acid-Derived Moiety of the Polyketide Ansatrienin A. *Biochemistry* 2000, 39 (25), 7595-7604.
 - Chen, S.; von Bamberg, D.; Hale, V.; Breuer, M.; Hardt, B.; Müller, R.; Floss, H. G.; Reynolds, K. A.; Leistner, E. Biosynthesis of ansatrienin (mycotrienin) and naphthomycin. *Eur. J. Biochem.* 1999, 261 (1), 98-107.
 - Liu, H.; Reynolds, K. A. Role of Crotonyl Coenzyme A Reductase in Determining the Ratio of Polyketides Monensin A and Monensin B Produced by *Streptomyces cinnamomensis*. *J. Bacteriol.* 1999, 181 (21), 6806-6813.
 - Zhang, Y.-X.; Denoya, C. D.; Skinner, D. D.; Fedechko, R. W.; McArthur, H. A.; Morgenstern, M. R.; Davies, R. A.; Lobo, S.; Reynolds, K. A.; Hutchinson, C. R. Genes encoding acyl-CoA dehydrogenase (AcdH) homologues from *Streptomyces coelicolor* and *Streptomyces avermitilis* provide insights into the metabolism of small branched-chain fatty acids and macrolide antibiotic production. *Microbiology* 1999, 145 (9), 2323-2334.
 - Zhou, P.; Florova, G.; Reynolds, K. A. Polyketide synthase acyl carrier protein (ACP) as a substrate and a catalyst for malonyl ACP biosynthesis. *Chem. Biol.* 1999, 6 (8), 577-584.
 - Florova, G.; Denoya, C. D.; Morgenstern, M. R.; Skinner, D. D.; Reynolds, K. A., Cloning, Expression, and Characterization of a Type II 3-Dehydroquinone Dehydratase Gene from *Streptomyces hygroscopicus*. *Arch. Biochem. Biophys.* 1998, 350 (2), 298-306.
 - Florova, G.; Lindsay, Y. M.; Brown, M. S.; McArthur, H. A.; Denoya, C. D.; Reynolds, K. A. Stereochemical analyses of the *Streptomyces hygroscopicus* var. *ascomyceticus* type-II dehydroquinone dehydratase and evidence for a role of the enzyme in the biosynthesis of the shikimate-derived moiety of ascomycin. *J. Org. Chem.* 1998, 63 (23), 8098-8099.
 - Han, L.; Lobo, S.; Reynolds, K. A. Characterization of β -ketoacyl-acyl carrier protein synthase III from *Streptomyces glaucescens* and its role in initiation of fatty acid biosynthesis. *J. Bacteriol.* 1998, 180 (17), 4481-4486.
 - Reynolds, K. A. Combinatorial biosynthesis: lesson learned from nature. *Proc. Natl. Acad. Sci. U.S.A.* 1998, 95 (22), 12744-12746.
 - Stassi, D.; Kakavas, S.; Reynolds, K.; Gunawardana, G.; Swanson, S.; Zeidner, D.; Jackson, M.; Liu, H.; Buko, A.; Katz, L. Ethyl-substituted erythromycin derivatives produced by directed metabolic engineering. *Proc. Natl. Acad. Sci. U.S.A.* 1998, 95 (13), 7305-7309.
 - Wilson, D.; Patton, S.; Florova, G.; Hale, V.; Reynolds, K. The shikimic acid pathway and polyketide biosynthesis. *J. Ind. Microbiol. Biotechnol.* 1998, 20 (5), 299-303.
 - Han, L.; Reynolds, K. A. A novel alternate anaplerotic pathway to the glyoxylate cycle in streptomycetes. *J. Bacteriol.* 1997, 179 (16), 5157-5164.
 - Liu, H.; Wallace, K. K.; Reynolds, K. A. Linking diversity in evolutionary origin and stereospecificity for enoyl thioester reductases: Determination and interpretation of the novel stereochemical course of reaction catalyzed by crotonyl CoA reductase from *Streptomyces collinus*. *J. Am. Chem. Soc.* 1997, 119 (13), 2973-2979.
 - Reynolds, K. A.; Wallace, K. K.; Handa, S.; Brown, M. S.; McArthur, H. A.; Floss, H. G. Biosynthesis of the shikimate-derived starter unit of the immunosuppressant ascomycin: stereochemistry of the 1, 4-conjugate elimination. *J. Antibiot.* 1997, 50

- (8), 701-703.
- Reynolds, K. A.; Holland, K. A. The mechanistic and evolutionary basis of stereospecificity for hydrogen transfers in enzyme-catalysed processes. *Chem. Soc. Rev.* 1997, 26 (5), 337-343.
 - Wallace, K. K.; Lobo, S.; Han, L.; McArthur, H.; Reynolds, K. A. In vivo and in vitro effects of thiolactomycin on fatty acid biosynthesis in *Streptomyces collinus*. *J. Bacteriol.* 1997, 179 (12), 3884-3891.
 - Wang, P.; Denoya, C. D.; Morgenstern, M. R.; Skinner, D. D.; Wallace, K. K.; Digate, R.; Patton, S.; Banavali, N.; Schuler, G.; Speedie, M. K. Cloning and characterization of the gene encoding 1-cyclohexenylcarbonyl coenzyme A reductase from *Streptomyces collinus*. *J. Bacteriol.* 1996, 178 (23), 6873-6881.
 - Bridge, C. F.; O'Hagan, D.; Reynolds, K. A.; Wallace, K. K. Kinetic and stereoelectronic effects of a fluorine substituent on the reaction catalysed by an NADPH-dependent cyclohex-1-enylcarbonyl CoA reductase. *J. Chem. Soc., Chem. Commun.* 1995, (22), 2329-2330.
 - O'Hagan, D.; Rogers, S. V.; Duffin, G. R.; Reynolds, K. A. The Biosynthesis of Monensin-A: Thymine, β -Aminoisobutyrate and Methacrylate Metabolism in *Streptomyces cinnamomensis*. *J. Antibiot.* 1995, 48 (11), 1280-1287.
 - Wallace, K. K.; Zhao, B.; McArthur, H. A.; Reynolds, K. A. In vivo analysis of straight-chain and branched-chain fatty acid biosynthesis in three actinomycetes. *FEMS Microbiol. Lett.* 1995, 131 (2), 227-234.
 - Wallace, K. K.; Bao, Z. Y.; Dai, H.; Digate, R.; Schuler, G.; Speedie, M. K.; Reynolds, K. A. Purification of Crotonyl-CoA Reductase from *Streptomyces collinus* and Cloning, Sequencing and Expression of the Corresponding Gene in *Escherichia coli*. *Eur. J. Biochem.* 1995, 233 (3), 954-962.
 - O'Hagan, D.; Rogers, S. V.; Reynolds, K. A.; Duffin, G. R. The incorporation of thymine and β -aminoisobutyrate into the polyether antibiotic, monensin-A. *J. Chem. Soc., Chem. Commun.* 1994, (13), 1577-1578.
 - Wallace, K. K.; Reynolds, K. A.; Koch, K.; McArthur, H. A.; Brown, M.; Wax, R. G.; Moore, B. S. Biosynthetic studies of ascomycin (FK520): formation of the (1R, 3R, 4R)-3, 4-dihydroxycyclohexanecarboxylic acid-derived moiety. *J. Am. Chem. Soc.* 1994, 116 (25), 11600-11601.
 - Moore, B. S.; Cho, H.; Casati, R.; Kennedy, E.; Reynolds, K. A.; Mocek, U.; Beale, J. M.; Floss, H. G. Biosynthetic studies on ansatrienin A. Formation of the cyclohexanecarboxylic acid moiety. *J. Am. Chem. Soc.* 1993, 115 (12), 5254-5266.
 - Reynolds, K. A. Comparison of two unusual enoyl-CoA reductases in *Streptomyces collinus*. *J. Nat. Prod.* 1993, 56 (2), 175-185.
 - Reynolds, K. A.; Seaton, N.; Fox, K. M.; Warner, K.; Wang, P. Mechanistic Studies of a Δ^1 , Δ^2 Cyclohexenylcarbonyl CoA Isomerase Catalyzing the Penultimate Step in the Biosynthesis of the Cyclohexanecarboxylic Acid Moiety of Ansatrienin A. *J. Nat. Prod.* 1993, 56 (6), 825-829.
 - Callery, P. S.; Subramanyam, B.; Yuan, Z.-M.; Pou, S.; Geelhaar, L. A.; Reynolds, K. A. Isotopically sensitive regioselectivity in the oxidative deamination of a homologous series of diamines catalyzed by diamine oxidase. *Chem.-Biol. Interact.* 1992, 85 (1), 15-26.
 - Reynolds, K. A.; Wang, P.; Fox, K. M.; Floss, H. G. Biosynthesis of ansatrienin by *Streptomyces collinus*: Cell-free transformations of cyclohexene- and cyclohexadienecarboxylic acids. *J. Antibiot.* 1992, 45 (3), 411-419.

- Reynolds, K. A.; Wang, P.; Fox, K.; Speedie, M.; Lam, Y.; Floss, H. Purification and characterization of a novel enoyl coenzyme A reductase from *Streptomyces collinus*. *J. Bacteriol.* 1992, *174* (12), 3850-3854.
- Reynolds, K.; Martin, J.; Shen, S. J.; Esaki, N.; Soda, K.; Floss, H. G. Mechanistic studies of two amino acid racemases of broad substrate specificity from *Pseudomonas striata* and *Aeromonas caviae*. *J. of Basic Microbial.* 1991, *31* (3), 177-188.
- Reynolds, K. A.; Fox, K. M.; Yuan, Z. M.; Lam, Y. Biosynthesis of ansatirenin: stereochemical course of the final reduction step leading to the cyclohexanecarboxylic acid moiety. *J. Am. Chem. Soc.* 1991, *113* (11), 4339-4340.
- Brendelberger, G.; Rétey, J.; Ashworth, D. M.; Reynolds, K.A.; Willenbrock, F.; Robinson, J. A. Die enzymatische Umwandlung von Isobutyryl-zu n-Butyrylcarba (dethia)-Coenzym A: Eine coenzym-B12-abhängige Gerüstumlagerung. *Angew. Chem.* 1988, *100* (8), 1122-1124.
- Reynolds, K. A.; O'Hagan, D.; Gani, D.; Robinson, J. A. Butyrate metabolism in streptomycetes. Characterization of an intramolecular vicinal interchange rearrangement linking isobutyrate and butyrate in *Streptomyces cinnamomensis*. *J. Chem. Soc., Perkin Trans. 1* 1988, (12), 3195-3207.
- Reynolds, K.; Gani, D.; Robinson, J. A., Biosynthesis of monensin. Evidence for a vicinal interchange rearrangement linking n-butyryl-CoA and isobutyryl-CoA. *J. Am. Chem. Soc., Chem. Comm.* 1986, (17), 1334-1336.
- Gani, D.; O'Hagan, D.; Reynolds, K.; Robinson, J. A. Biosynthesis of the polyether antibiotic monensin-A: stereochemical aspects of the incorporation and metabolism of isobutyrate. *J. Am. Chem. Soc., Chem. Comm.* 1985, (14), 1002-1004.
- Reynolds, K.; Robinson, J. A., Biosynthesis of monensin. The intramolecular rearrangement of isobutyryl-CoA to n-butyryl-CoA. *J. Am. Chem. Soc., Chem. Comm.* 1985, (24), 1831-1832.

Book Chapters

- Liu, H.; Reynolds, K. A. Antibiotic Biosynthesis. In *Encyclopedia of Microbiology, Four-Volume Set*, Edition 2; Alexander, M.; Bloom, B. R.; Hopwood, D. A.; Hull, R.; Iglewski, B. H.; Laskin, A. I.; Oliver, S. G.; Schaechter, M.; Summers, W. C.; Lederberg, J.; Elsevier Science: Boston, 2000; pp 189-207.
- Floss, H. G.; Cho, H.; Casati, R.; Reynolds, K. A.; Kennedy, E.; Moore, B.; Beale, J.; Mocek, U.; Poralla, K. Diversions of the shikimate pathway—the biosynthesis of cyclohexanecarboxylic acid. In *Secondary-Metabolite Biosynthesis and Metabolism*; Petroski, R. J.; McCormick, S. P. Springer, 1992; pp 77-88.
- Reynolds, K. A.; Floss, H. G. Stereochemical aspects of natural product biosynthesis. In *Studies in Natural Products Chemistry*. Elsevier B. V. 1992, *11*, 181.