

# M. IAN PHILLIPS

*Norris Professor of Applied Life Sciences, Director, Center for Rare Disease Therapies, and Faculty Advisor for the Post Baccalaureate Premedical Certificate Program*

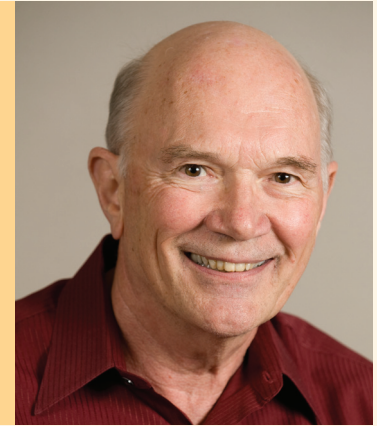
## AREAS OF EXPERTISE

Cardiac stem cells, heart failure, hemorrhagic stroke, AAV vectors, gene modification, orphan drugs, stem cell therapy, gene therapy

## CONTACT INFORMATION

909- 607-7487

ian\_phillips@kgi.edu; <http://www.kgi.edu/ianphillips>



Dr. Phillips received his PhD and DSc in pharmacology at the University of Birmingham in the United Kingdom. He was a postdoctoral fellow at the University of Michigan and an instructor and fellow in the Division of Biology at California Institute of Technology. From 1970-1980, he was Professor of Physiology at the University of Iowa. In 1977, as a Humboldt Foundation Scholar, Dr. Phillips spent a year at the University of Heidelberg in Germany and at the University of Zurich in Switzerland. In 1990, he served as Program Director of Neurobiology at the National Science Foundation in Washington, DC where he worked with the White House Office of Technology on "The Decade of the Brain." From 1980-2002, Dr. Phillips was Chairman of Physiology at the University of Florida. At UF he built a modern gene-oriented Department of Physiology and founded the Division of Functional Genomics. In 2002, Dr. Phillips was appointed Vice President for Research at the University of South Florida, Tampa. As Vice President he worked to increase the economic impact of the university and the total research awards to USF and also organized the construction of the research building and business incubator in the USF Research Park.

In 2006, Dr. Phillips joined Keck Graduate Institute of Applied Life Sciences (KGI) with his research lab and grants. He was appointed Norris Professor of Applied Life Sciences and founding director of the Center for Rare Disease Therapies. He also established and currently directs the Post Baccalaureate Premedical Certificate Program. Among his honors, Dr. Phillips was awarded the 2002 Christopher Columbus Award for Science and Technology, the 1989 Lucian Award (McGill University) for research in circulatory disease, and a MERIT award from NIH;10 years of funding. He is an elected Fellow of the American Heart Association (FAHA) and Fellow of the American Association for the Advancement of Science (AAAS). During his career, Dr. Phillips has published 11 books and more than 300 papers and reviews. He has taught over 3,000 medical students and trained over 40 PhD students and postdoctoral fellows.

## RESEARCH SYNOPSIS

Dr. Phillips discovered an independent hormonal system, the tissue renin angiotensin system, in the brain, heart, blood vessels and fat cells. His discoveries have broad significance for the development of new antihypertensive drugs. He was previously a consultant for Merck, Squibb and Hoechst. At the University of Florida, he initiated a gene therapy and stem cell therapy approach to hypertension and heart diseases. At KGI, he is pursuing his stem cell therapy studies full time.

## KEY RESEARCH CAPABILITIES

Capabilities of the Phillips lab include cell culture, stem cell culture, stem cell isolation and differentiation, micro-RNA identification and expression regulation, antisense inhibition, gene engineering, gene modification, quantitative real time PCR, immunohistochemistry, fluorescence and confocal microscopy, and standard molecular biology techniques and can accommodate collaborations on exercise and heart size, stroke and hemorrhage.

## CURRENT RESEARCH PROJECTS

**Directed Stem Cell Differentiation:** Dr. Phillips is collaborating with Yao Liang Tang at the University of Cincinnati and Edilamar de Oliveira at San Paulo University in Brazil to study how to differentiate cardiac stem cells into functional cardiomyocytes and test them in the repair of heart tissue after myocardial infarction and prevent heart failure.

**Gene Vector Control of Bleeding:** In many situations such as combat injury, surgery, rare bleeding diseases and cerebral stroke, hemorrhage needs to be stopped to prevent death. The Phillips lab has developed an automatic gene vector hemostat based on genetic engineering and testing in human endothelial cells. The vector responds to the oxygen change in injured tissues, and releases clotting factors locally in small enough amounts to stop bleeding but not cause thrombosis. The Phillips lab collaborates with the US Army Surgical Institute in San Antonio, Texas and the University of South Florida, Tampa for study of battlefield combat injuries and with the neurology department of University of California, San Diego for stroke studies.

**Orphan Drug Products:** Dr. Phillips directs the Center for Rare Disease Therapies, which has many research activities including the search for drugs that can be developed to treat rare diseases. The Center runs workshops with the FDA, projects sponsored by drug companies, and patient advocate groups specializing in rare diseases.

## FUTURE RESEARCH INTERESTS

Future research interests of the Phillips lab include microRNA gene expression regulation of ventricular hypertrophy and the Renin-Angiotensin system, automatic cessation of hemorrhage in complex surgery, rare diseases and rare disease health policy.

## SELECTED PUBLICATIONS

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KECK GRADUATE INSTITUTE  
of Applied Life Sciences

535 Watson Drive, Claremont, CA 91711  
[www.kgi.edu](http://www.kgi.edu)