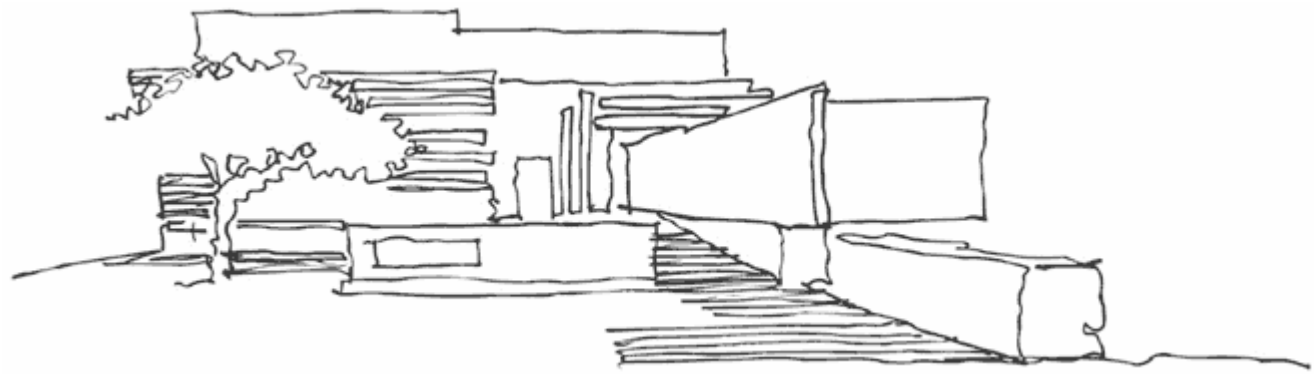
2010 STIAS LESINGSREEKS

2010 STIAS LECTURE SERIES



stias STELLENBOSCH INSTITUTE FOR ADVANCED STUDY
STELLENBOSSE INSTITUUT VIR GEVORDERDE NAVORSING

U word hiermee vriendelik uitgenooi na die vierde openbare **STIAS** lesing van 2010. Hierdie geleentheid bied aan alle US navorsers en studente, sowel as belangstellendes vanuit die publiek, die kans om meer te leer oor die werksaamhede van STIAS genote.

By hierdie geleentheid sal **Prof Lynn Margulis, Distinguished University Professor, Department of Geosciences, University of Massachusetts Amherst en Donald Gordon STIAS genoot** 'n aanbieding gee met die titel:

Gaia & Symbiogenesis: The living Earth from Space

You are hereby cordially invited to attend the fourth **STIAS** lecture of 2010. This event will offer all SU researchers and students, as well as members of the public, the opportunity to learn more about the work of STIAS fellows.

At this event, **Prof Lynn Margulis, Distinguished University Professor, Department of Geosciences, University of Massachusetts Amherst and Donald Gordon STIAS fellow** will present a talk with the title:

Gaia & Symbiogenesis: The living Earth from Space

We will explore the basis for, extensions and current status of the Gaia hypothesis. "Gaia," now a theory, may be best understood as "symbiosis as seen from space" and evolution perhaps best summarized as "symbiogenesis as seen from space." Gaia theory postulates that certain surface conditions on Earth, specifically concentration of reactive atmospheric gases (e.g., oxygen, methane, carbon dioxide, hydrogen sulfide), ocean acidity/alkalinity and surface temperature are regulated by behavior, growth, reproduction and interaction of burgeoning, diverse populations of organisms. The worldview concept generated by the international space program and the lively imagination of its inventor James E. Lovelock, FRS was named by author William Golding.

The fundamental concepts of Darwinian evolution: all life forms evolved from common ancestors; more organisms are born, budded and otherwise produced than can ever survive (i.e., natural selection) and some variation is heritable have been well established by observations in genetics, anatomy and physiology, molecular biology and biochemistry and other fields. The 3500 million-year-history of life on Earth as measured by the fossil record on international geological time scale supports Darwin's vision in general. However many beliefs taught to biology students purported to explain evolution (e.g., the "gene" or the "individual" is the unit of "selection," group selection does not occur, evolutionary innovation derives from "gradual accumulation of random mutations," sex generates variation) are patently absurd. We will see how the major source of evolutionary novelty (symbiogenesis) was independently detailed by Boris Mikaylovich Kozo-Polyansky (1921, 1924) and by Ivan Emanuel Wallin in 1927.

Datum: Donderdag 11 November 2010
Tyd: 13:00
Plek: Con de Villiers lesingsaal, JC Smuts gebou, Universiteit Stellenbosch
Neem die voetbruggie oor Merriman straat vanaf die Neelsie

Ons sien uit daarna om u by hierdie geleentheid te verwelkom - moet dit nie misloop nie!

Vir meer inligting, konrtak vir Maryke Hunter-Husselmann 021 808 4623 of mh3@sun.ac.za

Date: Thursday 11 November 2010

Time: 13:00

Place: Con de Villiers lecture hall, JC Smuts building, Stellenbosch University

Take the foot bridge over Merriman street from the Neelsie.

We look forward to welcoming you at this event, which is not to be missed!

For more information, contact Maryke Hunter-Husselmann 021 808 4623 or mh3@sun.ac.za

Professor Lynn Margulis

Lynn Margulis is Distinguished University Professor in the Department of Geosciences at the University of Massachusetts, Amherst. She was elected to the National Academy of Sciences in 1983, received from William J. Clinton the Presidential Medal of Science in 1999. The Library of Congress, Washington, D.C., announced in 1998 that it will permanently archive her papers. She was a faculty mentor at Boston University for 22 years.

Her publications, spanning a wide range of scientific topics, include original contributions to cell biology and microbial evolution. She is best known for her theory of symbiogenesis, which challenges a central tenet of neodarwinism. She argues that inherited variation, significant in evolution, does not come mainly from random mutations. Rather new tissues, organs, and even new species evolve primarily through the long-lasting intimacy of strangers. The fusion of genomes in symbioses followed by natural selection, she suggests, leads to increasingly complex levels of individuality. Dr. Margulis is also acknowledged for her contribution to James E. Lovelock's Gaia concept. Gaia theory posits that the Earth's surface interactions among living beings sediment, air, and water have created a vast self-regulating system.

Professor Margulis, who participates in hands-on teaching activities at levels from middle to graduate school, is the author of many articles and books. The most recent include Symbiotic Planet: A new look at evolution (1998) and Acquiring Genomes: A theory of the origins of species (2002), co-written with Dorion Sagan. Indeed, over the past decade and a half, Professor Margulis has co-written a number of books with Sagan, among them What is Sex? (1997), What is Life? (1995), Mystery Dance: On the evolution of human sexuality (1991), Microcosmos: Four billion years of evolution from our microbial ancestors (1986), and Origins of Sex: Three billion years of genetic recombination (1986). Her work with K. V. Schwartz provides a consistent formal classification of all life on Earth and has lead to the third edition of Five Kingdoms: An illustrated guide to the phyla of life on Earth (1998). Their evolutionary classification scheme was generated from scientific results of numerous colleagues. The logical basis for it is summarized in her single-authored book Symbiosis in Cell Evolution: Microbial communities in the Archean and Proterozoic eons (second edition, 1993). The bacterial origins of both chloroplasts and mitochondria are established. At present she works on the possible origin of cilia from spirochetes.