COPEA 15 ANOS – FRONTEIRAS DA CIÊNCIA

PROGRAMAÇÃO DE AGOSTO/2009

Horário: 5as. feiras, 17:30 às 19 horas

Local: Auditório da Academia Brasileira de Ciências
r. Anfilófio de Carvalho, 29, 3º (trav. Av. Graça Aranha, 174)

Dia 06

NORMAL AND NEOPLASTIC STEM CELLS

IRVING WEISSMAN (STANFORD UNIVERSITY)

Self renewal is the principal property that distinguishes stem cells from their daughter cells; when stem cells divide they give rise to stem cells (by self-renewal) and progenitors (by differentiation). The balance between self-renewal and differentiation is what generates and then maintains tissues and enables them to respond to injury or other stressors. Studies identifying hematopoietic stem cells (HSC) and progenitors have made hematopoiesis one of the best systems for studying the molecular changes in cell fate decision-making and oncogenesis. Further, it serves a paradigm for finding preclinical and clinical platforms for tissue and organ replacement and regeneration, Stem cell isolation and transplantation is the basis for regenerative medicine. Self-renewal is dangerous, and therefore strictly regulated. Poorly regulated self-renewal can lead to the genesis of cancer stem cells (CSC), the only cells within a tumor or leukemia that have the ability to self renew and therefore, the cells that maintain the cancer. Thus, it is predicted that CSC elimination is required for cure. This prediction necessitates profoundly different approaches to cancer research, compelling investigators to prospectively isolate CSCs and to characterize the molecular pathways regulating their behavior in order to identify targeted and truly effective therapies.

Local: Fórum de Ciência e Cultura

Dia 13

ALL FROM NOTHING: THE STRUCTURING OF OUR UNIVERSE

SIMON WHITE (MAX PLANCK INSTITUTE FOR ASTROPHYSICS)

Telescopes are time-machines. They allow us to see into the distant past. Our deepest images show the Universe not as it is today, but as it was just 400,000 years after the Big Bang. At that time there were no galaxies, no stars, no planets, no people, no familiar elements other than hydrogen and helium. The cosmos contained nothing but weak sound waves in a near-uniform fog. Supercomputers can compress thirteen billion years of cosmic evolution into a few months of calculation to show how these sound waves developed into the rich structure we see around us today. A study of their harmonic content gives clues to their origin. They appear to be an echo of quantum zero-point fluctuations occurring a tiny fraction of a second after the Big Bang. Thus our entire world may be a consequence of the nature of this early vacuum. In a very real sense, everything may have come from nothing.

Dia 20

THE SUN'S GLORY

JEAN-CLAUDE PECKER (COLLÈGE DE FRANCE)

The Sun is our star, we Earthians. A star like billions of other stars in the Universe. There is nothing surprising in noting that astronomers are very strongly in love with it. There are many reasons for that interest: First of all, the Sun, being a star like others, allows us to understand better the starry universe. The Sun is also a physics laboratory, without any danger for anyone. And never forget that the Sun is the talented conductor of the planetary symphony.But it is also our Sun, the source of all energies, of all our pleasures, of all our lives. Often the Sun literally crushes men by its glory, by its beauty. One looks only slantwise at it, at the time of its rising or when its sinks very low, just above the evening horizon. Seen front face, it burns, it consumes us, in its splendour. Man lives from the solar beneficial heat, but Icarus is burned and falls in the deadly sea. Painters or poets, so many witnesses are either dazzled or terrified by its formidable and splendid brightness.The Sun of astronomers is not anymore fearful. One approaches it, one explores it. One pierces the mysteries of the solar machinery, a huge magnetic dynamo. The fire tongues swallow its surface, above its bright atmosphere. Its corona, a luminous gas, ejects into space fast jets of matter; and the enormous coronal ejecta penetrate the whole solar system to the more distant planets. The beauty of the show, which illuminates astronomers, is a counterpart to that to which painters and poets are so sensitive.The solar science is indeed a beautiful science, and the Sun in its glory is, in the midst of the sky, very simply, beautiful. Can any other conclusion be better fitted than this homage to that double beauty which illuminates us, by its double enchantment?

Dia 27

EVOLUÇÃO DO UNIVERSO E AS PRIMEIRAS ESTRELAS

BEATRIZ BARBUY (IAG/USP)

Trataremos de descrever a evolução do Universo em linhas gerais, até a formação das primeiras estrelas e a formação dos elementos químicos. Hoje usam-se as abundâncias medidas em estrelas velhas, para estudar a formação da Galáxia.

As conferências são franqueadas ao público

Reitor: Aloisio Teixeira ; **Coordenador Executivo**: Luiz Pinguelli Rosa (UFRJ).
Membros da COPEA: Belita Koiller (UFRJ), Elisa Reis (UFRJ), Henrique Toma (USP), Jacob Palis (IMPA), Jerson Lima Silva (UFRJ), Moysés Nussenzveig (UFRJ,**Coordenador Científico**), Sérgio H. Ferreira (USP),Vivaldo Moura Neto (UFRJ).
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