"Adventures in Eukaryotic Gene Expression: Transcription, Splicing, Polyadenylation, and RNAi"

Morning Schedule, 8:30 a.m -1:15 p.m.

8:30 Breakfast
9:00 Steve Buratowski: Welcome/Retrospective
9:15-10:15 Pierre Chambon: "Genetic dissection of retinoid signaling through cell-specific temporally-controlled targeted mutagenesis"
10:15-10:35 Melissa Moore: "The exon junction complex"
10:35-10:55 Claire Moore: "Novel connections betweeen the mRNA 3' end processing, transcription, and export machineries"
10:55-11:10 Coffee Break
11:10-11:30 Ben Shykind: "One cell, one receptor: generating neuronal diversity in the olfactory system"
11:30-11:50 Lewis Chodosh: "Breast cancer reversibility and progression"
11:50-12:10 David Fisher: "From MLTF to human cancer"
12:10-12:30 Richard Carthew: "Genes and biological complexity"
12:30-12:50 Tom Tuschl: "Biochemical analysis of mammalian RNA silencing mechanisms"
12:50-1:00 Phil Sharp: Closing remarks

Afternoon Alumni Poster Session, 3-6 p.m.

Minou Bina: Locating the control elements in human DNA
Myles Brown: New roles for steroid receptor coregulators
Steve Buratowski: Connecting transcription with mRNA processing and chromatin
Christopher Burge & Zefeng Wang: Exonic silencers of splicing
Chonghui Cheng: Signal transduction and alternative splicing
Gilbert Chu: Transcriptional responses to DNA damage predict toxicity from radiation therapy
Richard Condit: Vaccinia virus transcription elongation
John Doench: Specificity and mechanism of microRNAs
William Fairbrother: Exonic splicing enhancers
Andrew Fire: Molecular warning lights: three "unwanted" nucleic acid structures that trigger genetic silencing
Paula Grabowski: Splicing decisions, neurons, and G clusters
Alla Grishok: miRNA pathway genes and cell division in C. elegans
Hristo Houbaviy: Embryonic stem cell-specific microRNA cluster
Jørgen Kjems: Role of TAR RNA in HIV-1 dimerization
Magda Konarska & Charles Query: Equilibrium between spliceosome conformations controls fidelity of pre-mRNA splicing
Thomas Kristie: HCF-1 control of HSV lytic and latent cycles
Frank Laski: Regulation of Drosophila development
Rachel Meyers: Towards the development of an siRNA therapeutic
Claire Moore: Polyadenylation: beyond the basics
Rick Padgett: Splicing in a minor key
Jeff Parvin: Breast and ovarian specific tumor suppressor BRCA1
Chris Petersen: Mechanism of microRNA silencing in mammals
John Sedivy: MYC targets and senescence
Ben Shykind: Generating neuronal diversity in the olfactory system
Dean Tantin: Oct protein function in and out of the immune system
Anders Virtanen: Poly(A)-specific ribonuclease: connecting the mRNA 5' and 3' ends

Highlights of research from the Sharp lab and 5th floor accomplishments in the course of 30 years

1974-1979: The early years: transcripts, splicing, and introns
Phil Sharp starts his lab on the 5th floor of the newly established Center for Cancer Research. The long corridors connect his lab with the labs of Baltimore, Weinberg, Hopkins, and Housman; Baltimore wins the Nobel Prize for the discovery of the enzyme reverse transcriptase; the Sharp lab discovers gene splicing; recombinant DNA research becomes a controversial issue; Sharp cofounds Biogen

During these five years the Sharp lab
- *observes splicing in adenoviruses*
- *discovers techniques for mapping segments of adenoviruses and retroviruses*

1980-1985: Biochemistry of gene expression
The Weinberg lab discovers the first human oncogene; the Baltimore and Weinberg labs move to the newly established Whitehead Institute; Sharp becomes Director of the CCR

During these five years the Sharp lab
- *continues with studies on transcription and splicing; requirements for splicing are elucidated*
- *develops an in vitro system for splicing with identification of lariat RNA, spliceosome*
- *develops model systems for gene expression*
- *develops in vitro systems for transcription and polyadenylation reaction*

1985-1995: The machinery of transcription and splicing
The Housman lab isolates the gene for Wilms' tumor and, in collaboration with others, finds the genes responsible for Huntington's disease and myotonic dystrophy; Sharp wins the Nobel Prize for split genes and becomes Head of the Biology Department

During these ten years the Sharp lab
- *isolates the factors involved in gene expression and transcription*
- *further elucidates mechanisms and requirements for splicing, transcription, and polyadenylation*

1995-2004: New approaches and RNAi
The 5th floor welcomes Tyler Jacks, Jackie Lees and Michael Yaffe; Sharp becomes Director of the McGovern Institute and cofounds Alnylam

During these nine years the Sharp lab
- *works on interaction of splicing factors and enhancers*
- *works on computational biology with prediction of enhancers and evolution of U12 introns*
- *examines the biochemistry of RNAi mechanisms and microRNA activity*