

Genome course schedule as of May 3rd, 2002.

Directors: Mitchell L. **Sogin** (MBL), Claire M. **Fraser** (TIGR), Alex **Bateman** (Sanger Center), Judy **Blake** (Jackson Labs), Christopher **Burge** (MIT), Gary **Churchill** (JAX), **Michael Cummings** (MBL), Pieter J. **de Jong** (CHORI), Ed **DeLong** (MBARI at Moss Landing), Jonathan **Eisen** (TIGR), Michael **Eisen** (University of California, Berkeley), Tamara **Feldblyum** (TIGR), Joe **Felsenstein** (University of Washington), Steven **Gil**, (TIGR) Michael **Gray** (Dalhousie University), John **Heidelberg** (TIGR), Jim **Kent** (UCSC), Ulandt **Kim** (MBL), Norman **Lee** (TIGR), Renae **Malek** (TIGR), Barbara **Mann** (University of VA), Andrew **McArthur** (MBL), Jill **Mesirov** (Whitehead Institute), Hilary **Morrison** (MBL), Gene **Myers** (Celera Genomics), Karen **Nelson** (TIGR), William **Nierman** (TIGR), Chad **Nusbaum** (Whitehead Institute, MIT), Howard **Ochman** (University of Arizona), Gary **Olsen** (Univ. of Il.), Jeffrey **Palmer** (Indiana University), William **Pearson** (University of Virginia), Scott **Peterson** (TIGR), Mihai **Pop** (TIGR), Claudia **Reich** (Univ. of Il), Anna-Louise **Reysenbach** (Portland State University), Monica **Riley** (MBL), Martin **Ringwald** (Jackson Labs), David **Roos** (Penn), Steven **Salzberg** (TIGR), Hamilton **Smith** (Celera), Alex **Bateman** (Sanger) Herve **Titlin** (TIGR), Craig **Venter** (TIGR), Jennifer **Wernegreen** (MBL), Owen **White** (TIGR), John **Yates** (Scripps Research Institute).

ADVANCES IN GENOME TECHNOLOGY AND BIOINFORMATICS

MARINE BIOLOGICAL LABORATORY AND
THE INSTITUTE FOR GENOMIC RESEARCH
October 6 – November 1, 2002 - Woods Hole, MA

Directors:

Claire M. Fraser -The Institute for Genomic Research

Mitchell L. Sogin-The Marine Biological Laboratory at Woods Hole

(Provisional Schedule as of October 10, 2001)

* Confirmed faculty.

**Conditional faculty confirmations

Morning lectures and laboratory sessions will end between 12:00 and 12:30 pm

Afternoon lectures and laboratory sessions will end between 5:00 and 5:30 pm

Evening lectures and laboratory sessions will end between 9:00 and 9:30 pm.

• SUNDAY October 6, 2002

All Day

Registration

Swope

7:30 pm

Reception

Meigs Room, Swope

- **MONDAY** **October 7, 2002**
 - 9:00 am ***Mitchell L. Sogin** *Candle House 104*
Welcome to Marine Biological Laboratory at Woods Hole
 - 9:30 am ***Claire Fraser** *Candle House 104*
Introduction to Advances in Genome Technology and Bioinformatics.
 - 10:30 am ***Owen White** *Computer Lab*
Information Management and Integration in Genome Projects
 - 1:30 pm ***William Nierman** *Candle House 104*
Novel Strategies in Genomic and cDNA Library and Vector Construction
 - 3:30 pm ***Claudia Reich** *Wet Laboratory Lillie 320*
DNA isolation/ plasmid library construction
 - 7:00 pm ***Hamilton Smith** *Candle House 104*
Library construction strategies for genome sequencing projects

- **TUESDAY** **October 8, 2002**
 - 9:00 am ***Michael Cummings** *Candle House 104*
Introduction to Bioinformatics (Logins, passwords, overview of bioinformatics)
 - 10:30 am ***Michael Cummings** *Computer Lab*
Computers and Bioinformatics (UNIX, computational environment, databases)
 - 1:30 pm ***William Nierman** *Candle House 104*
Genome Sequencing Strategies (Shotgun genome sequencing, BAC-based methods)
 - 3:30 pm ***Claudia Reich** *Wet Laboratory Lillie 320*
Library Construction continued (Finish library construction, plate library)

- **WEDNESDAY** **October 9, 2002**
 - 9:00 am ***Hilary Morrison, Ulandt Kim** *Wet Laboratory Lillie 320*
Template production – high-throughput manual methods.
 - 10:30 am ***Tamara Feldblyum** *Wet Laboratory Lillie 320*
Template production – high-throughput robotics
 - 1:30 pm ***Chad Nusbaum** *Candle House 104*
Principles of Automation [Engineering, High-throughput robotics]
 - 3:30 pm ***Hilary Morrison** *Computer/Wet Lab Lillie 320*
Computing and Robotics
 - 7:00 pm ***Pieter J. de Jong** *Candle House 104*
Strategies for BAC library construction

- **THURSDAY** **October 10, 2002**
 - 9:00 am ***Tamara Feldblyum** *Candle House 104*
Nucleic Acid Chemistry and Enzymology (Overview of sequencing dyes and chemistries)
 - 10:00 am ***Tamara Feldblyum** *Wet Laboratory Lillie 320*
Sequencing DNA (Reaction set-up, precipitation, thermal cycling, gels)
 - 1:30 pm ***Tamara Feldblyum** *Wet Laboratory Lillie 320*

- 3:30 pm Sequencing DNA continued
* **Andrew McArthur** *Computer Laboratory*
Sequencing Informatics (Base calling, tracking, quality, vector removal)
- **FRIDAY** **October 11, 2002**
 - 9:00 am * **Mihai Pop** *Candle House 104*
Genome sequence assembly (Quality values, assembly concepts and methods)
 - 1:30 pm * **Tamara Feldblyum** *Computer Laboratory*
Data analysis, trouble shooting.
 - 3:30 pm * **Mihai Pop** *Computer Laboratory*
Assembly of sequences (Analyze output from assembly program)
 - 7:00 pm * **Craig Venter** *Candle House 104*
Whole shotgun sequencing of large genomes
 - **SATURDAY** **October 12, 2002**
 - 9:00 am * **Gene Meyers** *Candle House 104*
Mini Symposium: Assembly algorithms and scaffolds in genome assemblies
 - 10:30 am ** **Jim Kent** *Candle House 104*
Mini Symposium: Assembly-TBA
 - 1:30 pm * **Mihai Pop** *Candle House 104*
Mini Symposium: Pitfalls and quality control assessment of sequence assemblies
 - 3:30 pm * **Panel** *Candle House 104*
Mini Symposium: The utility of draft versus complete genome sequence data
 - **SUNDAY** **October 13, 2002**
Free Day
 - **MONDAY** **October 14, 2002**
 - 9:00 am * **John Heidelberg** *Candle House 104*
Closure Methods (Closure informatics and methods, transposons)
 - 10:30 am * **John Heidelberg** *Computer Lab*
Closure Tools
 - 1:30 pm * **John Heidelberg** * **Hilary Morrison** *Wet Laboratory Lillie 320*
Genome Closure laboratory [Set up closure reactions, pour gels]
 - 3:30 pm * **John Heidelberg** *Computer Lab*
Closure laboratory (Assembly confirmation, sequence editing, primer prediction)
 - 7:00 pm * **John Heidelberg** * **Hilary Morrison** *Wet Laboratory Lillie 320*
Genome Closure laboratory (Load gels for sequencing run)
 - **TUESDAY** **October 15, 2002**
 - 9:00 am * **John Heidelberg** * **Hilary Morrison** *Wet Laboratory Lillie 320*
Analysis of closure sequences

- 10:00 am * **John Heidelberg** *Computer Laboratory*
Genome assembly after closure (Run assemblies, check coverage, edit assemblies, repeat identification)
- 1:30 pm * **Owen White** *Candle House 104*
Annotation overview
- 3:30 pm * **Steven Salzberg** *Candle House 104*
Introduction to Gene finding (Gene finding, ORFs, intron-exon, RNAs, cDNAs and ESTs)
- **WEDNESDAY** **October 16, 2002**
 - 8:30 am * **Faculty** *Wet Laboratory Lillie 320*
High Throughput DNA sequencing
 - 9:30 am * **Steven Salzberg** *Computer Laboratory*
Gene Finding - Prokaryotes
 - 10:30 am ** **Christopher Burge** *Computer Laboratory*
Gene Finding - Eukaryotes
 - 1:30 pm * **Jonathan Eisen** *Candle House 104*
Gene analysis – gene features
 - 3:30 pm * **Steven Salzberg** *Computer Laboratory*
Gene analysis-Genes Features (Codon usage, GC content)
 - **THURSDAY** **October 17, 2002**
 - 8:30 am * **Faculty** *Wet Laboratory Lillie 320*
High Throughput DNA sequencing
 - 9:30 am **Alex Bateman** *Candle House 104*
Pfam a data-base of protein families
 - 10:30 am **Alex Bateman** *Computer Lab*
HMM design and identification of gene families
 - 1:30 pm * **Steven Salzberg** *Computer Laboratory*
Whole genome features/alignment
 - 7:00 pm **TBA** *Candle House 104*
New technologies for automated DNA sequencing
 - **FRIDAY** **October 18, 2002**
 - 8:30 am **Faculty** *Wet Laboratory Lillie 320*
High Throughput DNA sequencing
 - 9:30 am * **Gary Olsen** *Candle House 104*
Principles of sequence alignment.
 - 1:30 pm * **Steven Salzberg** *Computer Laboratory*
Sequence alignment laboratory.
 - **SATURDAY** **October 19, 2002**
Free Weekend
 - **SUNDAY** **October 20, 2002**
Free Weekend

- **MONDAY** **October 21, 2002**
 - 8:30 am * **Faculty** *Wet Laboratory Lillie 320*
High-throughput DNA sequencing
 - 9:30 am * **Monica Riley** *Candle House 104*
Functional Classification of Gene Products
 - 10:30 am * **Judy Blake** *Candle House 104*
The Gene Ontology Resource
 - 1:30 pm **Faculty (Blake, White, McArthur)** *Computer Lab*
Database resources: CMR, TIGR indices, MXD, MutaJax, TAIR
 - 7:00 pm * **Howard Ochman** *Candle House 104*
Lateral Gene Transfer

- **TUESDAY** **October 22, 2002**
 - 8:30 am * **Faculty** *Wet Laboratory Lillie 320*
High-throughput DNA sequencing
 - 9:30 am * **William Pearson** *Candle House 104*
Similarity search methods
 - 1:30 pm * **William Pearson** *Computer Lab*
Similarity search methods.

- **WEDNESDAY** **October 23, 2002**
 - 8:30 am * **Faculty** *Wet Laboratory Lillie 320*
High-throughput DNA sequencing
 - 9:30 am * **Jonathan Eisen** *Candle House 104*
Gene Family Phylogeny
 - 1:30 pm * **Jonathan Eisen** *Computer Lab*
Phylogenetics/phylogenomics
 - 7:00 pm * **Joe Felsenstein** *Candle House 104*
Coalescence and genome evolution

- **THURSDAY** **October 24, 2002**
 - 8:30 am * **Faculty** *Wet Laboratory Lillie 320*
High-throughput DNA sequencing
 - 9:30 am * **Jennifer Wernegreen** *Candle House 104*
Endosymbiosis and genome evolution
 - 10:30 am * **Michael Cummings** *Computer Lab*
WEB resources for phylogenetics
 - 1:30 pm * **Joe Felsenstein** *Computer Lab*
Coalescence and phylogenetics

- **FRIDAY** **October 25, 2002**
 - 8:30 am * **Faculty** *Wet Laboratory Lillie 320*
High-throughput DNA sequencing
 - 9:30 am * **Mike Gray** *Candle House 104*
Mitochondrial genome evolution

1:30 pm Open Computer Laboratory *Computer Lab*
7:30 pm ***Jeff Palmer** *Candle House 104*
Molecular evolution of organellar genomes

• **SATURDAY** **October 26, 2002**

8:30 am ***Faculty** *Wet Laboratory Lillie 320*
High-throughput DNA sequencing
9:30 am ***Anna-Louise Reysenbach.** *Candle House 104*
Mini-symposium: Environmental and Evolutionary Genomics, Molecular
analyses of microbial populations
10:30 am ***Ed DeLong** *Candle House 104*
Mini-symposium: Environmental and Evolutionary Genomics: BACs and
Gene expression
1:30 pm ***Karen Nelson** *Candle House 104*
Mini-symposium: Environmental and Evolutionary Genomics: Microbial
populations in animal hosts
3:30 pm ***Steven Gill** *Candle House 104*
Genome responses to pathogenesis
7:00 pm Course Banquet *Sogin residence*

• **SUNDAY** **October 27, 2002**

Free Day

• **MONDAY** **October 28, 2002**

8:30 am ***Faculty** *Wet Laboratory Lillie 320*
High-throughput DNA sequencing
9:30 am ***Norman Lee** *Candle House 104*
Introduction to DNA array technology (Pitfalls and quality control of
microarray experiments/experimental design)
10:30 am **Gene Machines Representative** *Wet Laboratory Lillie 320*
Arrayer Set-up and Printing
1:30 pm ***Norman Lee** *Wet Laboratory Lillie 320*
Probe preparation and labeling
2:30 pm ***Renae Malek** *Wet Laboratory Lillie 320*
Overnight Hybridization
7:00 pm **TBD** *Candle House 104*
Expression Profiling

• **TUESDAY** **October 29, 2002**

8:30 am ***Faculty** *Wet Laboratory Lillie 320*
High-throughput DNA sequencing
9:30 am ***John Quackenbush** *Candle House 104*
Collecting and analyzing hybridization data from single and multiple
experiments
1:30 pm ***Scott Peterson** *Candle House 104*
Issues in Prokaryotic vs. Eukaryotic Arrays

2:30 pm	* John Quackenbush Slide Washing	<i>Wet Laboratory Lillie 320</i>
3:00 pm	* Norman Lee Slide Washing	<i>Wet Laboratory Lillie 320</i>
3:00 pm	* Lisa Romano, Scanning and Data analysis	<i>Computer Laboratory</i>
7:30 pm	* Jill Mesirov Gene expression profiling in cancer biology	<i>Candle House 104</i>

• **WEDNESDAY** **October 30, 2002**

8:30 am	* Faculty High-throughput DNA sequencing	<i>Wet Laboratory Lillie 320</i>
9:30 am	* Gary Churchill Statistical approaches to analysis of microarray data	<i>Candle House 104</i>
10:30 am	* Michael Eisen Clustering algorithms for arrays	<i>Candle House 104</i>
1:30 pm	* Michael Eisen and Faculty Analysis of data from single and multiple experiments [Image processing, normalization, expression data-base design]	<i>Computer Lab 4</i>
7:00 pm	* Martin Ringwald Standards for representation and exchange of microarray data	<i>Candle House 104</i>

• **THURSDAY** **October 31, 2002**

8:30 am	* Faculty High-throughput DNA sequencing	<i>Wet Laboratory Lillie 320</i>
9:30 am	* Mitchell L. Sogin Mini-symposium: <i>Giardia lamblia</i> Genome	<i>Candle House 104</i>
10:30 am	* David Roos Mini-symposium: <i>Toxoplasma</i> genome	<i>Computer Lab</i>
1:30 pm	* Barbara Mann Mini-symposium: <i>Entamoebae</i> genome	<i>Candle House 104</i>
3:30 pm	** John Yates Mini-symposium: Proteomic analysis of <i>Plasmodium falciparum</i>	<i>Wet Laboratory Lillie 320</i>

• **FRIDAY** **November 1, 2002**

9:00 am	Students and Faculty Genome assembly and array expression	<i>Computer Laboratory</i>
1:30 pm	Students and Faculty Genome assembly and array expression	<i>Computer Laboratory</i>
3:30 pm	Students and Faculty Progress summary	<i>Candle House 104</i>