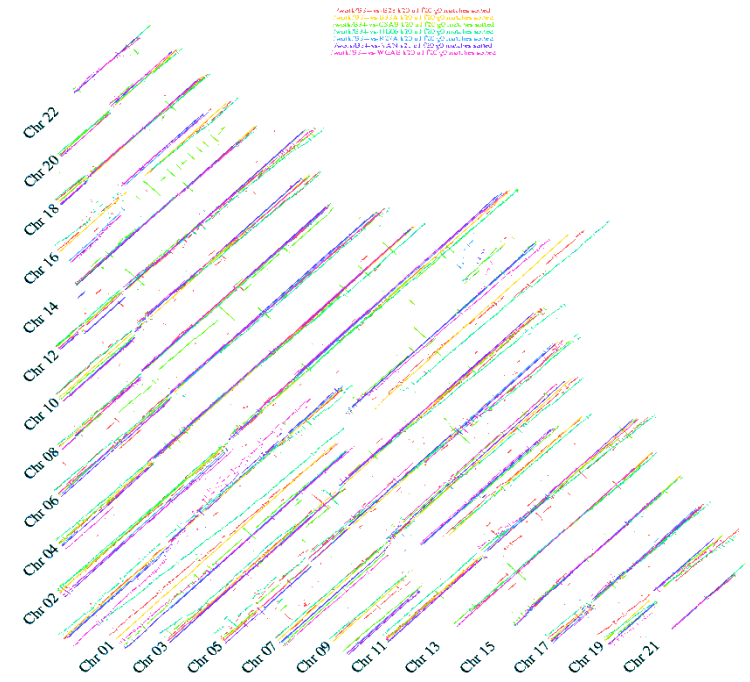


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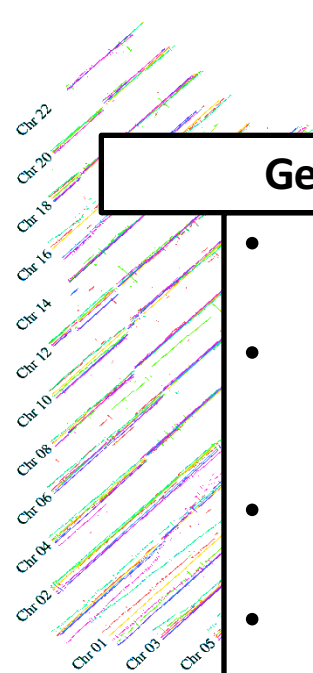
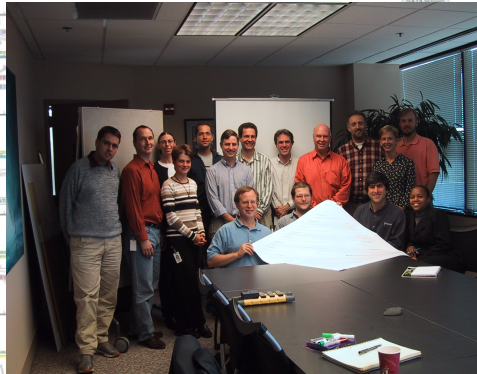
"The Sequence of the Human Genome" Science, 2001

"Whole-genome shotgun assembly and comparison of human genome assemblies" Proc. Nat. Acad. Sci. USA, 2004

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Genome Assembly

- *De-novo* genome assembly algorithms
- deBruijn graphs and Poisson theory of k-mers and NGS
- Lander-Waterman statistical theory
- Haplotype assembly

"Whole-genome shotgun assembly and comparison of human genome assemblies" Proc. Nat. Acad. Sci. USA, 2004

"The Sequence of the Human Genome" Science, 2001

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The Regulatory Genome



- The social network of Transcription Factors
- DNA combinatorics and statistics of Transcription Factor regulatory architecture
- Poisson clumps heuristics
- Chen-Stein Statistics



Eric Davidson and Sorin working on "Logic functions of the genetic cis-regulatory code"

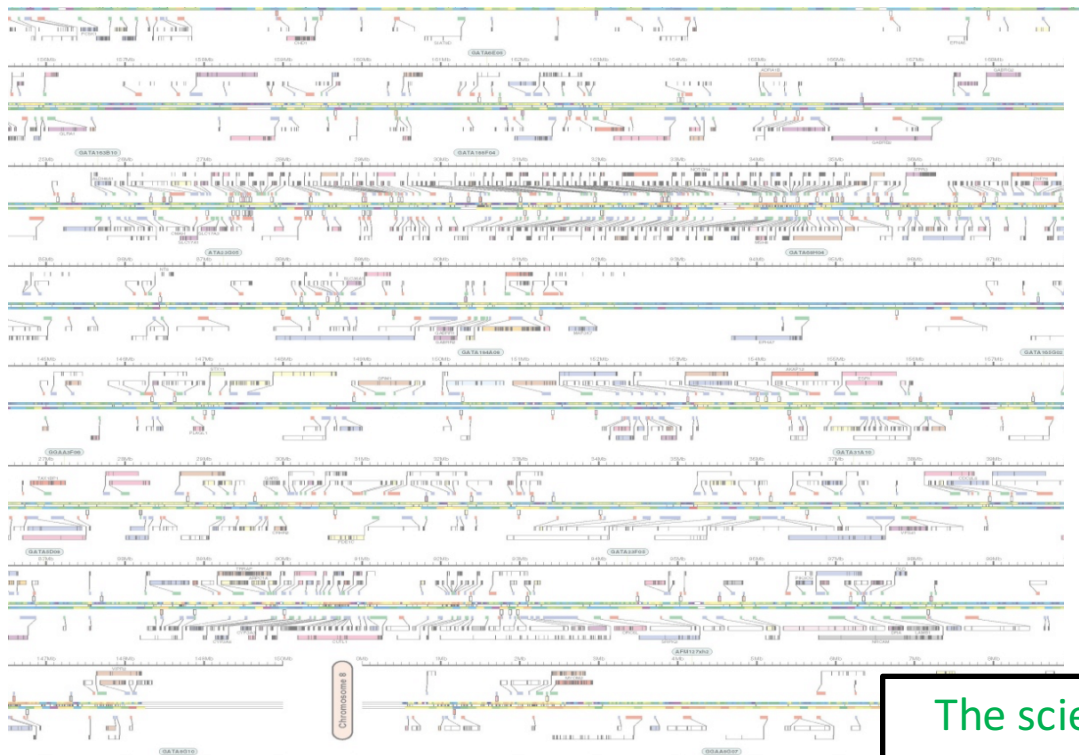
The cis-Regulatory CYRENE Genome Browser

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- Suffix trees in linear time
- Burrows-Wheeler transform
- Karlin-Altshuler Statistics
- BLAST algorithm: Random walks, Information theory and P-values



CYRENE C

File Edit Search

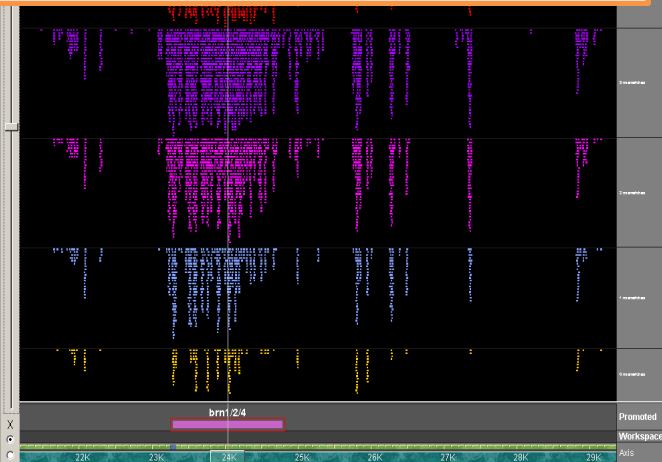
onyloctrotus puri

Known Chromosome

Genomic Axis (L

Promoted: RYAN: 200712121

Property	Value
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Order Number	1



The science and art of mapping DNA fragments, genes, and genomes to genomes

"The Sequence of the Human Genome" Science, 2001

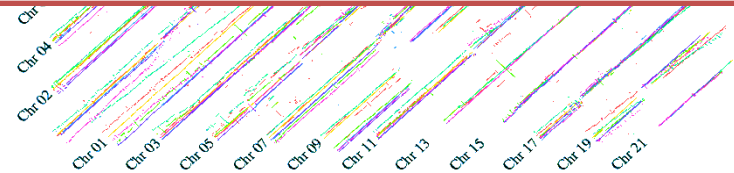
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Topics include

- Genome sequencing and assembly: algorithms and statistical theory
- BLAST algorithms and statistical theory of alignment and searching
- Mapping reads and genomes to genomes
- DNA combinatorics and statistical theory of regulatory regions of genes
- Hidden Markov model algorithms and gene prediction



"Whole-genome shotgun assembly and comparison of human genome assemblies" Proc. Nat. Acad. Sci. USA, 2004

"The Sequence of the Human Genome" Science, 2001