HOSTING GROUPS FOR INTERNATIONAL MOBILITY

Primates cytogenomics

Primates genome evolution is studied at different level of resolution. At chromosomes level are analyzed by various staining methods, or through the molecular cytogenetics by Fluorescent in situ hybridization (FISH) using different kind of probes mapped on metaphases. Probes are made and labelled mainly through PCR, some of which are prepared through the analysis bioinformatics data. Probes used can be whole chromosome paints or little fragments or just few genes. Furthermore, little sequences of DNA cloned in vectors such as Bacterial artificial chromosomes (BAC) can be used as probes. At higher level of resolution chromosomes can be studied through sequencing method which permits the reading of nucleotides sequences. Those Comparative genomics studies allows the reconstruction of the ancestral genome for each main branching node of the tree of primates. This reconstruction allows on the one hand the analysis of the relationship between species (phylogeny) and on the other, the evaluation of the steps that determined the current shape of the human chromosomes starting from the ancestral karyotype of all primates. Comparative genomics have been used to study especially eu-chromatin, the codifying region of genomes. More recently also the hetero-chromatin region, constitute of repetitive region, much more difficult to analyze, is understudies in order to understand its role and function during primates evolution.

Methods are: Cells cultures, metaphases banding, PCR and probes formation, FISH. Many international Laboratory are collaboration as it possible to evince from publication.



Team members: Francesca Dumas, Vanessa Milioto *Selected publications:*

Milioto, V., Arizza, V., Vizzini, A., Perelman, P. L., Roelke-Parker, M. E., & Dumas, F. (2024). Comparative Genomic Hybridization (CGH) in New World Monkeys (Primates) Reveals the Distribution of Repetitive Sequences in Cebinae and Callitrichinae. Biology, 14(1), 22. https://doi.org/10.3390/biology14010022

Milioto, V., Sineo, L., & Dumas, F. (2023). Chromosome Painting in Cercopithecus petaurista (Schreber, 1774) Compared to Other Monkeys of the Cercopithecini Tribe (Catarrhini, Primates). Life, 13(5), 1203. https://doi.org/10.3390/life13051203

Milioto, Vanessa, Perelman, Polina L, Paglia, Laura La, Biltueva, Larisa, Roelke, Melody, Dumas, Francesca (2022). Mapping Retrotransposon LINE-1 Sequences into Two Cebidae Species and Homo sapiens Genomes and a Short Review on Primates. GENES, vol. 13, 1742, ISSN: 2073-4425, doi: 10.3390/genes13101742

Simona Ceraulo, Polina L. Perelman, Sofia Mazzoleni, Michail Rovatsos, Francesca Dumas (2021). Repetitive sequence distribution on Saguinus, Leontocebus and Leontopithecus tamarins (Platyrrhine, Primates) by mapping

telomeric (TTAGGG) motifs and rDNA loci. BIOLOGY, vol. 10, p. 1-11, ISSN: 2079-7737, doi: 10.3390/biology10090844

Ceraulo S, Perelman PL, Dumas F (2021). Massive LINE-1 retrotransposon enrichment in tamarins of the Cebidae family (Platyrrhini, Primates) and its significance for genome evolution. JOURNAL OF ZOOLOGICAL SYSTEMATICS AND EVOLUTIONARY RESEARCH, p. 1-9, ISSN: 0947-5745, doi: 10.1111/jzs.12536