

Fish Cytogenetics



Editors
E. Pisano
C. Ozouf-Costaz
F. Foresti
B.G. Kapoor

Contents

Preface	v
List of Contributors	xi

Section 1

Fish Cytogenetics in Systematics and Evolution

1.1 Chromosomal Differentiation in Bitterlings (Pisces, Cyprinidae)	3
<i>Takayoshi Ueda</i>	
1.2 Chromosome Variability in Gymnotiformes (Teleostei: Ostariophysi)	17
<i>Lurdes Foresti de Almeida-Toledo, Maria de Fatima Zambelli Daniel-Silva, Cinthia Bachir Moysés and Fausto Foresti</i>	
1.3 The Evolutionary Role of Hybridization and Polyploidy in an Iberian Cyprinid Fish— A Cytogenetic Review	41
<i>Marta Gromicho and Maria João Collares-Pereira</i>	
1.4 Chromosomal Changes and Stasis in Marine Fish Groups	69
<i>Wagner Franco Molina</i>	
1.5 Karyotypic Evolution in Neotropical Fishes	111
<i>Claudio Oliveira, Lurdes Foresti de Almeida-Toledo and Fausto Foresti</i>	

- 1.6 Chromosomal Evolution in Mugilidae,
Mugilomorpha: An Overview 165
*Luciana Sola, Ekaterina Gornung,
Maria Elena Mannarelli and Anna Rita Rossi*
- 1.7 Chromosome Evolution in the Neotropical
Erythrinidae Fish Family: An Overview 195
Luiz Antonio Carlos Bertollo

Section 2

Fish Cytogenetics and Biodiversity Conservation

- 2.1 Cytogenetics as a Tool in Fish Conservation:
The Present Situation in Europe 215
*Petr Ráb, Jörg Bohlen, Marie Rábová,
Martin Flajšhans and Lukáš Kalous*
- 2.2 Cytogenetic Studies and Reproductive
Strategies of an Invasive Fish Species, the
Silver Crucian Carp (*Carassius auratus gibelio* Bloch) 241
Eszter Patakiné Várkonyi and Balázs Tóth

Section 3

Fish Cytogenetics in Stock Assessment and Aquaculture

- 3.1 Chromosomal Analysis in Population
Structuring and Stock Identification:
Robertsonian Polymorphism in the White
Sea Herring (*Clupea pallasii marisalbii*) 261
Dmitry L. Lajus
- 3.2 Cytogenetic Characteristics of Interspecific
Hybrids and Chromosome Set Manipulated Finfish 289
Konrad Ocalewicz, Malgorzata Jankun, and Miraslaw Luczynski
- 3.3 NOR Markers in the Identification and
Management of Cultured Fish Species:
The Case of Rainbow Trout Stocks Reared in Brazil 333
*Fábio Porto-Foresti, Claudio Oliveira, Yara Aiko Tabata,
Marcos Guilherme Rigolino and Fausto Foresti*

Section 4

Fish Cytogenetics and Genomics

- 4.1 FISH Analysis of Fish Transposable Elements:
Tracking Down Mobile DNA in Teleost Genomes 361**
*Agnès Dettai, Laurence Bouneau, Cécile Fischer, Christina
Schultheis, Cornelia Schmidt, Qingchun Zhou, Jean-Pierre
Coutanceau, Catherine Ozouf-Costaz and Jean-Nicolas Volff*
- 4.2 Polyploidy in Acipenseriformes:
Cytogenetic and Molecular Approaches 385**
*Francesco Fontana, Lorenzo Zane,
Anastasia Pepe and Leonardo Congiu*
- 4.3 Diversity in Isochore Structure and
Chromosome Banding in Fish 405**
*Gloria G. Fortes, Carmen Bouza, Ana Viñas,
Paulino Martínez and Laura Sánchez*
- 4.4 Chromosomes and Repetitive DNAs: A
Contribution to the Knowledge of the Fish Genome 421**
Cesar Martins
- 4.5 Application of Fluorescence *in situ*
Hybridization (FISH) to Genome Mapping in Fishes 455**
Ruth B. Phillips
- 4.6 Molecular Markers in Cartilaginous Fish Cytogenetics 473**
Lucia Rocco