Deciphering the IG and TR locus, genes and alleles in genomes of jawed vertebrates

General context: vertebrates genome assembly

Vertebrates from fish to human

DNA extraction

IG and TR loci on chromosomes

2p11.2 IGK
7p14 TRG
7q34 TRB
14q11.2 TRD TRA
14q32.33 IGH
22q11.2 IGL

2   7   14   22

External databases
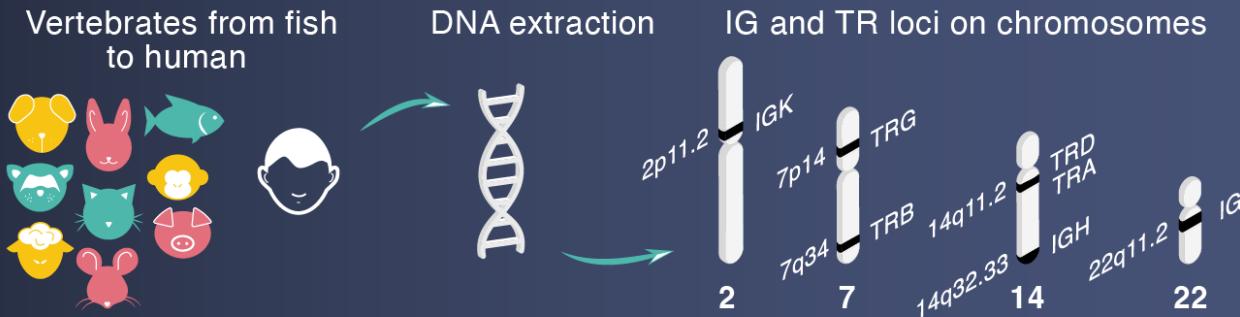
IMGT biocuration pipeline

Data acquisition: IG and TR locus extraction

Experts' analysis

ATCGCCGTCTCGTCGAC

VDJC annotation

V DJ C

IDENTIFICATION
(receptors, chains)

DESCRIPTION
(sequences, structures)

CLASSIFICATION
(gene & allele nomenclature)

NUMEROTATION
(codons, amino acids)

1 2 3 4 5 6

IMGT/LIGM-DB

nucleotide sequences database enrichment

IMGT-ONTOLOGY AXIOMS
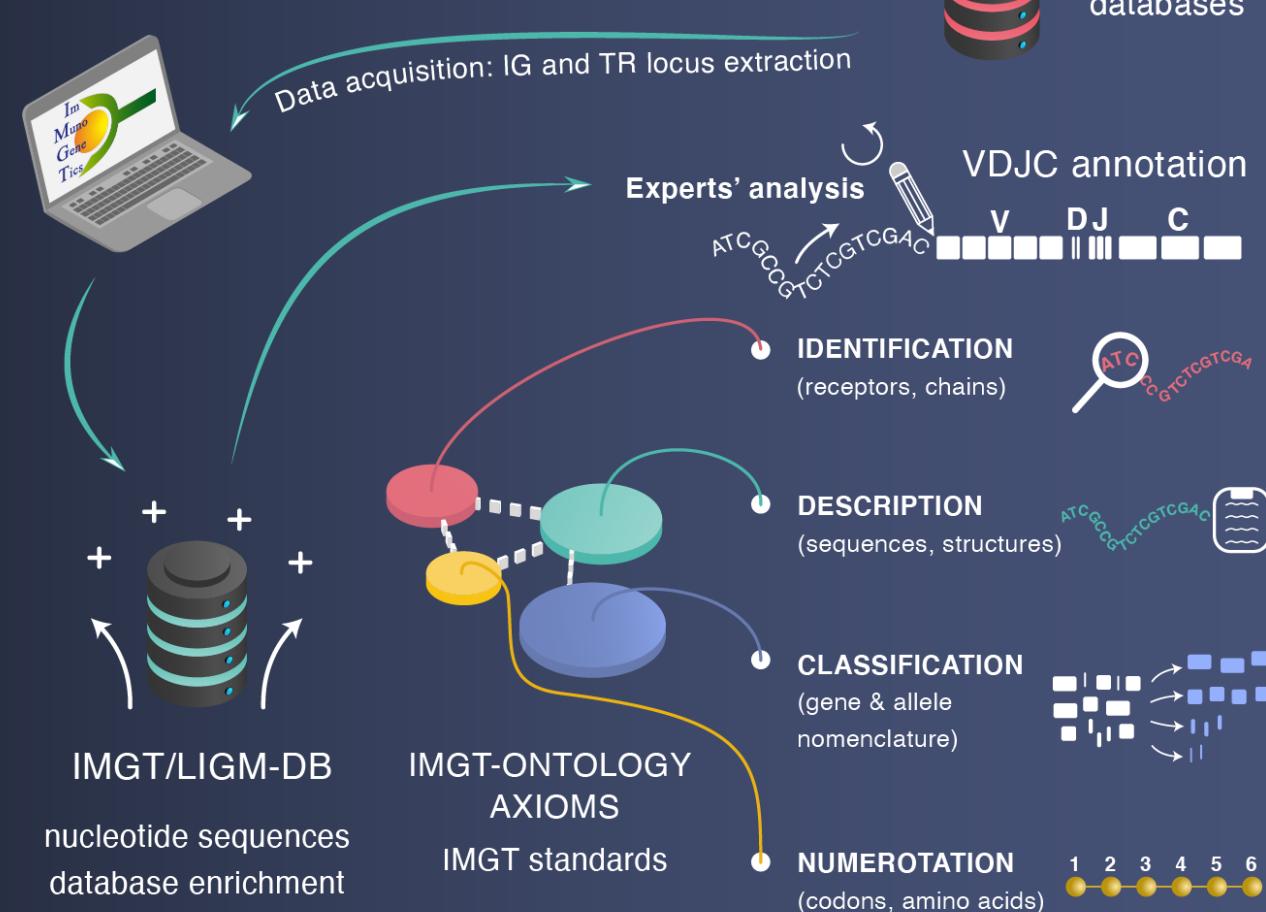
IMGT standards

Results: enriching IMGT core data sets

Databases enrichment, nomenclature assignment, standards enhancement

IMGT repertoire

- Locus representations
- Gene tables
- Protein display
- Alignments of alleles

IMGT reference directory

IG & TR genomic reference sequences
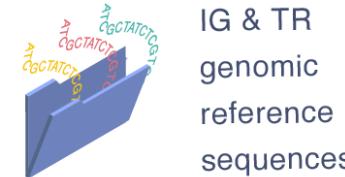
IMGT/GENE-DB

IG & TR genes and alleles database

IMGT tools and databases using IMGT reference directory

IMGT/V-QUEST & IMGT/HighV-QUEST
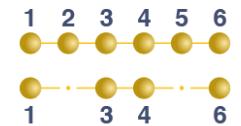
IMGT/ DomainGapAlign

1 2 3 4 5 6
1   3 4   6

IMGT/ Collier-de-Perles
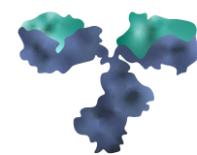
IMGT/2Dstructure-DB & IMGT/3Dstructure-DB

Applications

- IG & TR sequence comparison

ATCGT
ATGGT Polymorphisms / mutations

Haplotypes

- Comparative genomics
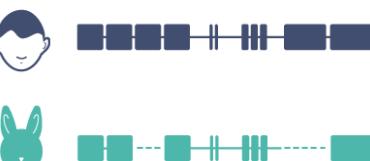
Evolutionary studies

Newly sequenced species expertise

ATCGCTACTCGTCC