

Journée du GT Bioss

23 novembre 2021

Organisation team

- Laurence Calzone (Institut Curie, Paris)
- Élisabeth Remy (I2M, CNRS, Marseille)
- Loïc Paulevé (LaBRI, CNRS, Bordeaux)
- Cédric Lhoussaine (CRIStAL, Université de Lille)

Thematic

Modeling of biological systems: fundamental computer sciences / (discrete) mathematics / molecular biology / health sciences

Scientific issues

- Modeling interactions between biological entities (**dynamics**)
- **Formal** and **symbolic** approach to modeling
- Specific features of biological systems ?
- Contributions of computer science and maths to biology ?

CNRS INS2I

Institut des sciences de l'information et de leurs interactions

GDR BiM (Molecular BioInformatique)

- “Computational and mathematical approaches for the processing of information related to biological molecules”
- 5 topics: sequences, evolution, 3D structures, modeling, metagenomics.

GDR IM (Informatique Mathématiques)

- GT groupes in 3 categories:
 1. Algorithms and combinatorics
 2. Computer algebra, arithmetic, information safety, geometry
 3. Logic and complexity

- GDR IA (GT Bioss-IA, INS2I)
- GDR BioSynSys (Synthetic and Systems Biology, INSB)
- GDR MAMОВI (MATHématiques de la MODélisation du Vivant, INSMI)

Objectives of Bioss

- **Structuring** the french scientific community interested in symbolic systems biology
- Creating a **interaction environment** for PhD students and postdocs
- **Disseminating information** (events, PhD defense, etc.)
- Acting on and influencing the **scientific policy** of the CNRS (through GDRs)
- Feeding the biological community with issues arising from formal modeling
- Feeding the computer science community with issues arising from biology

How ?

- Organising events: annual meetings and thematic workshops
- Monthly virtual seminar
- Fundings of travels for PhD students
- Mailing list: `membres@bioss-cnrs.fr`
- Web page: <https://www.bioss-cnrs.fr>

Some figures. . .

- 216 subscriber to the mailing list `membres@biooss-cnrs.fr`
- ~ 40 research groups (list available here:
<https://www.biooss-cnrs.fr/membres.html> maintained thanks to
you (→ `contact@biooss-cnrs.fr`)!
- 2 annual events (in normal conditions...)
 - Day of Biooss
 - Thematic workshop
- in 2021: 7 virtual seminars (14 speakers)

(some) 2021 highlights

Prices

- best student paper and best talk at DNA27 conference for Nicolas Lévy (supervised by Nicolas Schabanel, MC2 team, LIP, Lyon)

Books

- "Evolutionary Systems Biology", published by Anton Crombach (INRIA Beagle team), Springer
- "Approches symboliques de la modélisation et de l'analyse des systèmes biologiques", published by Cédric Lhoussaine et Élisabeth Remy, Encyclopédie SCIENCE, ISTE.

2021 (partial) highlights

Bioss' events

- Monthly virtual seminars
- Bioss' day, 23rd nov. 2021 in Lyon

Related events organized by Bioss members

- Int. conf. CMSB 2021 (Bordeaux)
- Int. conf. ISMB/ECCB 2021 (Lyon)
- Int. conf. AUTOMATA-WAN 2021 (Marseille)
- Int. conf. 8th Metabolic Pathway Analysis (US)
- Workshop "Modelling Heterogeneous Populations with applications in Biology" (Inria Grenoble)

National/ANR projects

- ANR AAPG2021 Computational Approaches for Multimodal Data Integration in Biomedicine (CAMUDI)
- ANR AAPG2021 Exploring dynamic regulation by RNAs (KineBioTics)
- ANR AAPG2021 Modeling Intestinal Glucose Absorption for Diabetes Prediction (MIGAD)
- Itmo Cancer MIC 2021

Main results/publications

- *Rice-like theorems for automata networks*. Guilhem Gamard, Pierre Guillon, Kévin Perrot, and Guillaume Theyssier. In Proceedings of STACS'21, volume 187 of LIPIcs, pages 32:1–32:17. Schloss Dagstuhl Publishing, March 2021) (LIS, Marseille)

HDR

- Delphine Ropers (Inria Grenoble)
- Annabelle Ballesta (Institut Curie/INSERM)

PhD theses

- Pacôme Perrotin (LIS, Marseille)
- Martín Ríos Wilson, co-tutelle Universidad de Chile & Université d'Aix-Marseille
- Léonard Hérault (IML, Marseille)
- Juraj Kolčák (LSV, Saclay)

Promotions

- Anaïs Baudot (DR CNRS)
- Élisabeth Rémy (DR CNRS)

What next ?

- Next monthly virtual seminars the 3/12:
 - Manish Kushwaha (Team Bio-RetroSynth, INRAE)
 - Athénaïs Vaginay (capsid team CRAN/LORIA)
- GDR IM days in Lille (29/03 → 01/04): call for poster!
- GDR IM renewal → scientific perspectives
- Thematic workshops (*hybrid modeling*)
- JOBIM 2022 (28/06 → 01/07) : call for symposium
- Improve information dissemination and update Bioss website

- Programme