Galaxy-SynBioCAD: tools and automated pipelines for Synthetic Biology Design and Metabolic Engineering

Thomas Duigou, Joan Hérisson, Melchior Du Lac, Kenza Bazi-Kabbaj, Mahnaz Sabeti Azad, Gizem Buldum, Olivier Telle, Yorgo El-Moubayed, Pablo Carbonell, Neil Swainston, et al.

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Équipe BioRetroSynth

T. Duigou[1], J. Hérisson[2], M. du Lac[1,3], K. Bazi Kabbaj[1], M. Sabeti Azad[1], G. Buldum[4], O. Telle[1], Y. El Moubayed[1], P. Carbonell[5,6], N. Swainston[5,7], V. Zulkower[8], M. Kushwaha[1], G. Baldwin[4], J.-L. Faulon[1,2,5]

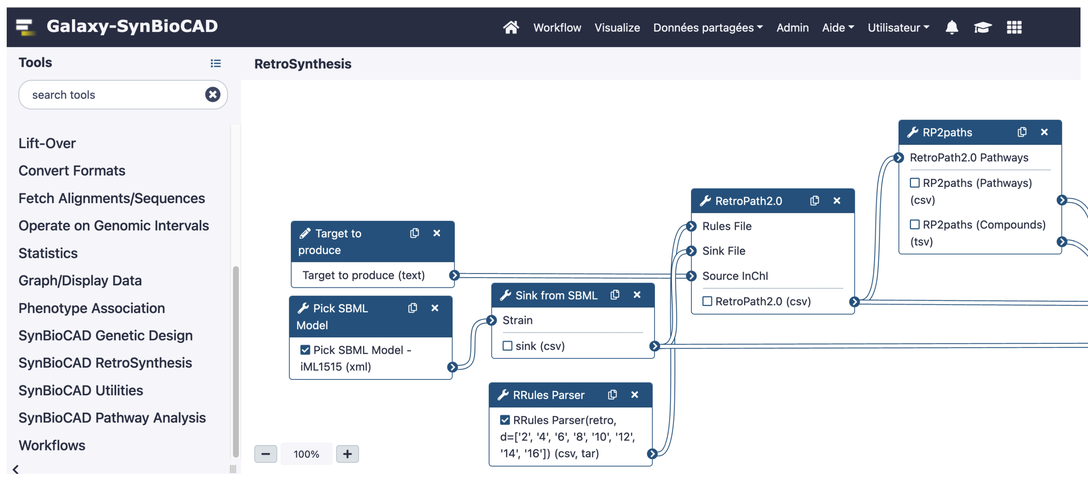
1 — Context

- **Many** tools, but **few** interoperability
- The (in-)**accessibility** of command line interface
- Not everyone owns a **computing cluster** "at home"

2 — The Galaxy-SynBioCAD portal

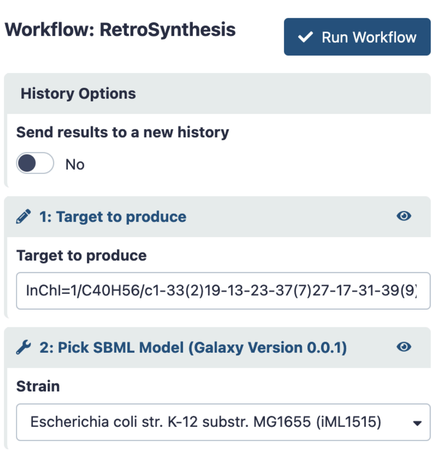
- Collection of **Galaxy-ready tools** and workflows
- **Interoperable** and **standardized** input / output:
  - SBML (metabolic pathways)
  - SBOL (genetic constructs)
- Use case workflows released so far:
  - **biosynthesis** pathway design
  - **pathway analysis** and scoring
  - genetic / **plasmid design**
  - **sensing-enabling** pathway design

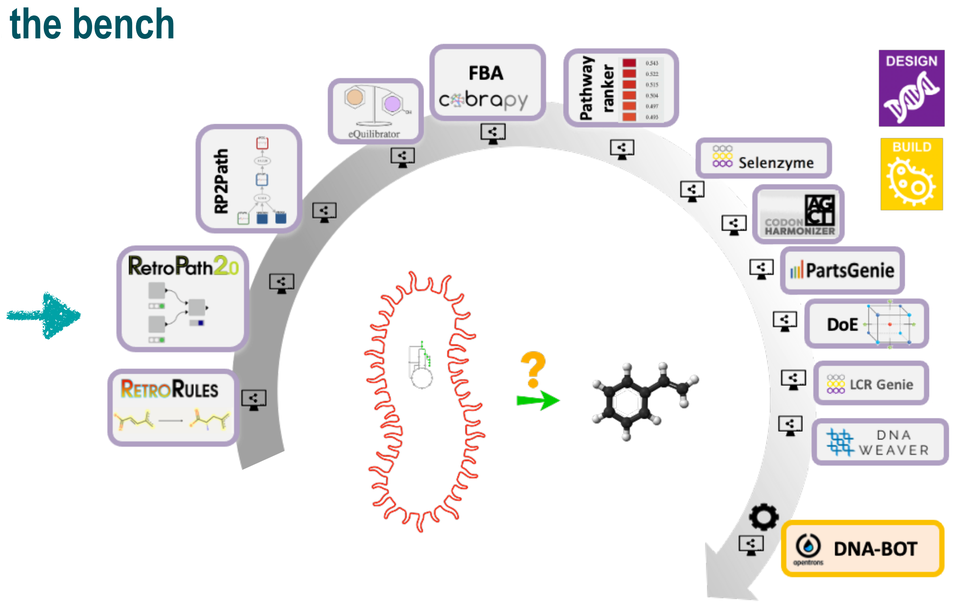
https://galaxy-synbiocad.org/

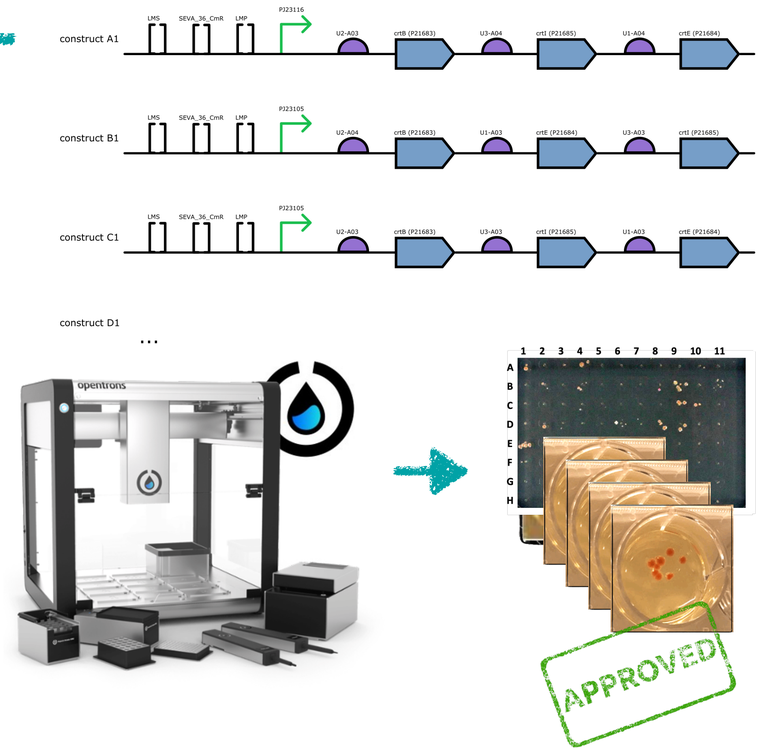


3 — From specification to bio-producing strains

- Showcase: **automate** design and construction of lycopene-producing strains **at the bench**







4 — Under the hood: CI/CD integration process

- Git commits trigger **GitHub actions**
- Tools released as **conda packages**
- **Wrappers validated** with Planemo
- Tools available from the **Galaxy ToolShed**
- Integration with the **IUC repo** in progress

Centre
Île-de-France – Jouy-en-Josas – Antony

1. Université Paris-Saclay, INRAE, AgroParisTech, Micalis Institute, 78352 Jouy-en-Josas, France
2. Genomics Metabolics, Genoscope, François Jacob Institute, CEA, CNRS, Évry University, Paris-Saclay University, 91057 Evry, France
3. Amyris Inc, Emeryville, CA, 94608-2405, US
4. Imperial College Centre for Synthetic Biology, Department of Life Sciences, Imperial College, London, SW7 2AZ, UK
5. Manchester Institute of Biotechnology, SYNBIOCHEM center, School of Chemistry, University of Manchester, Manchester M1 7DN, UK
6. Institute of Industrial Control Systems and Computing (ai2), Universitat Politècnica de València, 46022 Valencia, Spain
7. Institute of Systems, Molecular and Integrative Biology, University of Liverpool, Liverpool L69 7ZB, UK
8. Edinburgh Genome Foundry, SynthSys, School of Biological Sciences, University of Edinburgh, EH93BF Edinburgh, UK

Domaine de Vilvert
78 352 Jouy-en-Josas
Cedex contact :
thomas.duigou@inrae.fr
www.inrae.fr