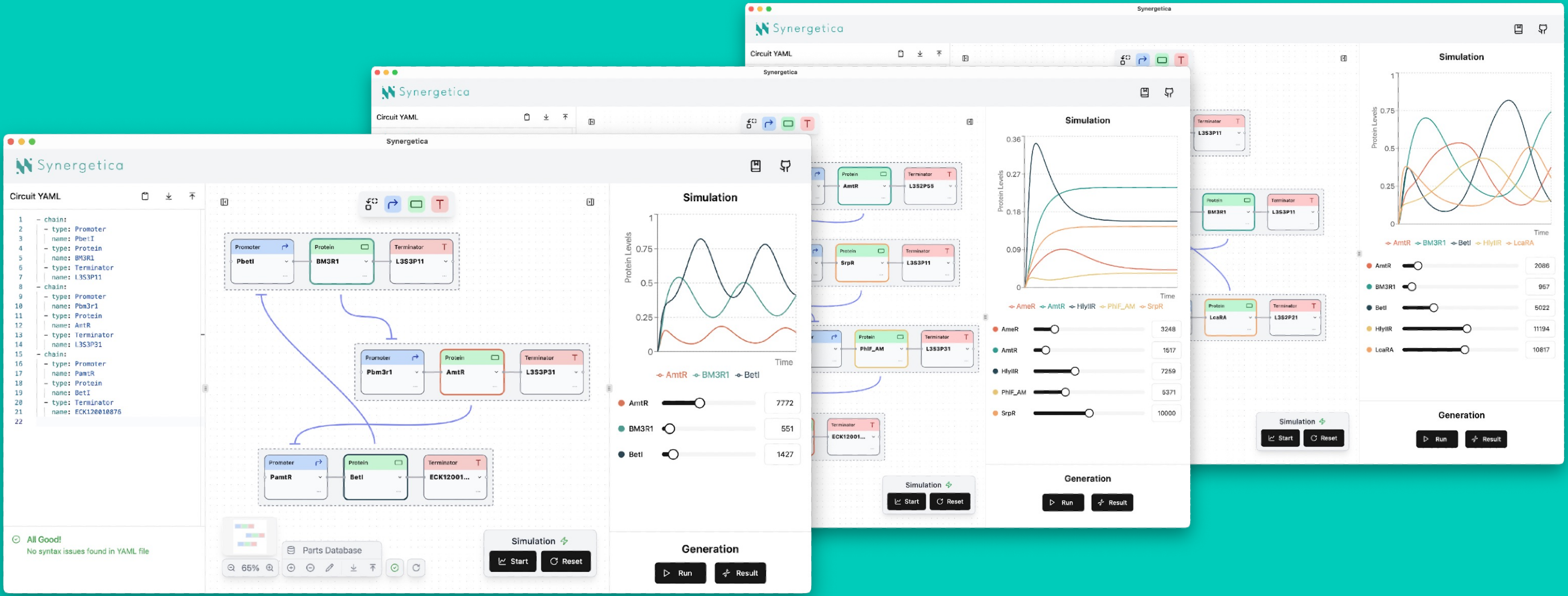
# 人工遺伝子回路設計のための統合開発環境
## -人工生命システムを誰でも設計できる未来へ-

2024年度未踏IT人材発掘・育成事業
奥田宗太 / 須賀幹太 / 外尾航季 (早稲田大学)

# Synergetica

A modern, end-to-end genetic circuit design desktop app


Synergetica
Circuit YAML
Promoter
Protein
Terminator
Pbetl
BM3R1
L3S3P11
Pbm3r1
AmtR
L3S3P31
PamtR
Betl
ECK12001...
65%
Parts Database
Simulation
Start
Reset
Protein Levels
Time
AmtR
BM3R1
Betl
7772
551
1427
Generation
Run
Result

```
- chain:
  - type: Promoter
    name: PbetI
  - type: Protein
    name: BM3R1
  - type: Terminator
    name: L3S3P11
- chain:
  - type: Promoter
    name: Pbm3r1
  - type: Protein
    name: AmtR
  - type: Terminator
    name: L3S3P31
- chain:
  - type: Promoter
    name: PamtR
  - type: Protein
    name: BetI
  - type: Terminator
    name: ECK120010876
```

All Good!
No syntax issues found in YAML file

# 人工遺伝子回路の設計から配列生成までが1つのツールで可能に

## 1. Design

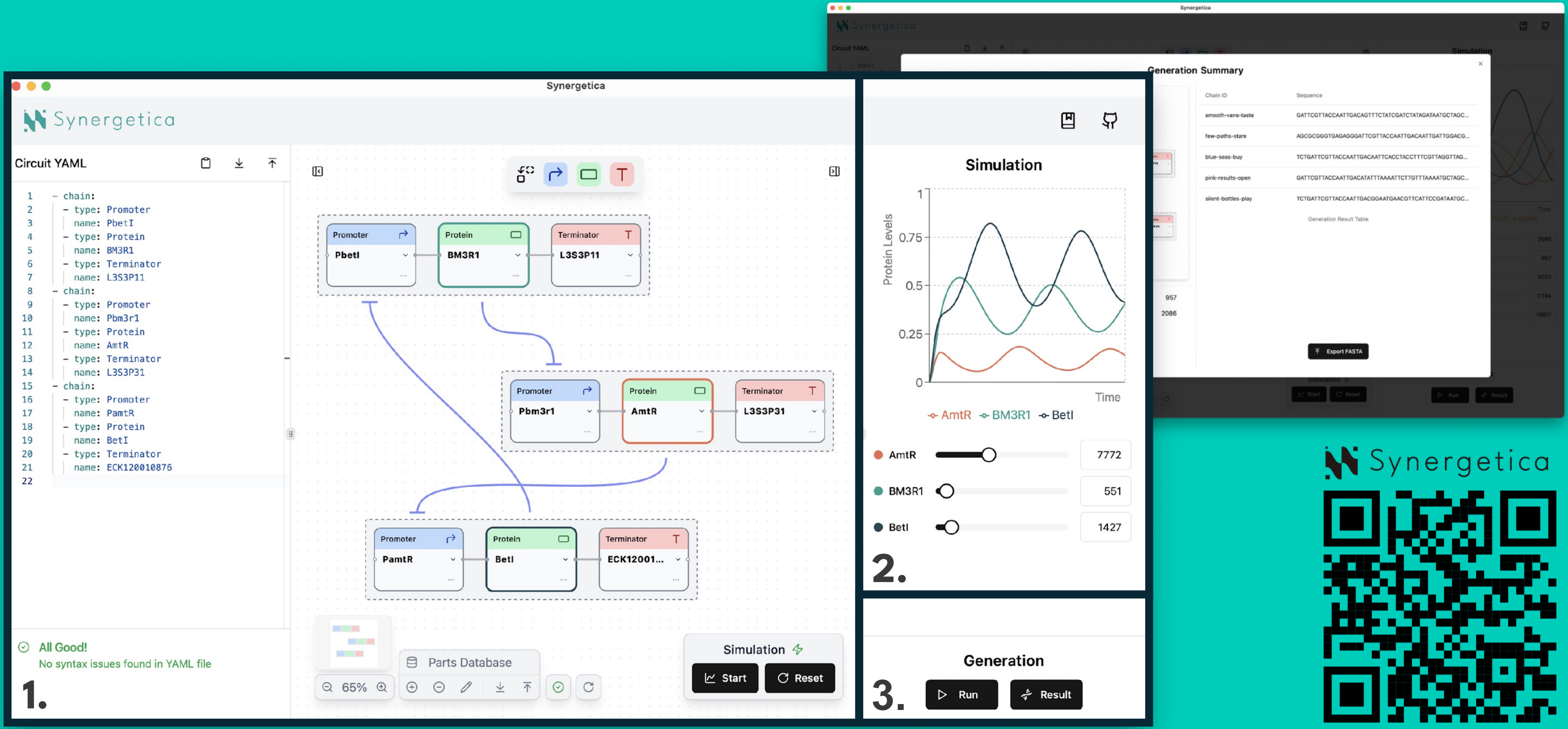
GUIとコードベース両方で
直感的に回路をデザイン

## 2. Simulation

ワンクリックで回路シミュレーション実行
しかもパラメータ変更を一瞬で反映

## 3.Generation

調整済みパラメータに応じたDNA配列を
自動生成→簡単にExport


Synergetica
Synergetica
Circuit YAML
Promoter
Pbetl
Protein
BM3R1
Terminator
L3S3P11
Promoter
Pbm3r1
Protein
AmtR
Terminator
L3S3P31
Promoter
PamtR
Protein
Betl
Terminator
ECK12001...
65%
Parts Database
Simulation
Start
Reset
Simulation
1
0.75
0.5
0.25
0
Protein Levels
Time
AmtR
BM3R1
BetI
Generation
Run
Result
Generation Summary
Export FASTA
1.
2.
3.

```
- chain:
  - type: Promoter
    name: PbetI
  - type: Protein
    name: BM3R1
  - type: Terminator
    name: L3S3P11
- chain:
  - type: Promoter
    name: Pbm3r1
  - type: Protein
    name: AmtR
  - type: Terminator
    name: L3S3P31
- chain:
  - type: Promoter
    name: PamtR
  - type: Protein
    name: BetI
  - type: Terminator
    name: ECK120010876
```

All Good!
No syntax issues found in YAML file

| | |
|---|---|
| AmtR | 7772 |
| BM3R1 | 551 |
| BetI | 1427 |

| Chain ID | Sequence |
|---|---|
| smooth-vans-taste | GATTCGTTACCAATTGACAGTTTCTATCGATCTATAGATAATGCTAGC... |
| few-paths-stare | AGCGCGGGTGAGAGGGATTCGTTACCAATTGACAATTGATTGGACG... |
| blue-seas-buy | TCTGATTCGTTACCAATTGACAATTCACCTACCTTTCGTTAGGTTAG... |
| pink-results-open | GATTCGTTACCAATTGACATATTTAAAATTCTTGTTTAAAATGCTAGC... |
| silent-bottles-play | TCTGATTCGTTACCAATTGACGGAATGAACGTTCATTCCGATAATGC... |

Generation Result Table

Synergetica