Parameter optimization using Genetic Algorithms

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- Heuristic search
- Mimics natural evolution via operations such as *mutations*, *crossovers* and *selection*.
- Utilizies a set of solutions (a population) in order to successively produce better ones (over generations).

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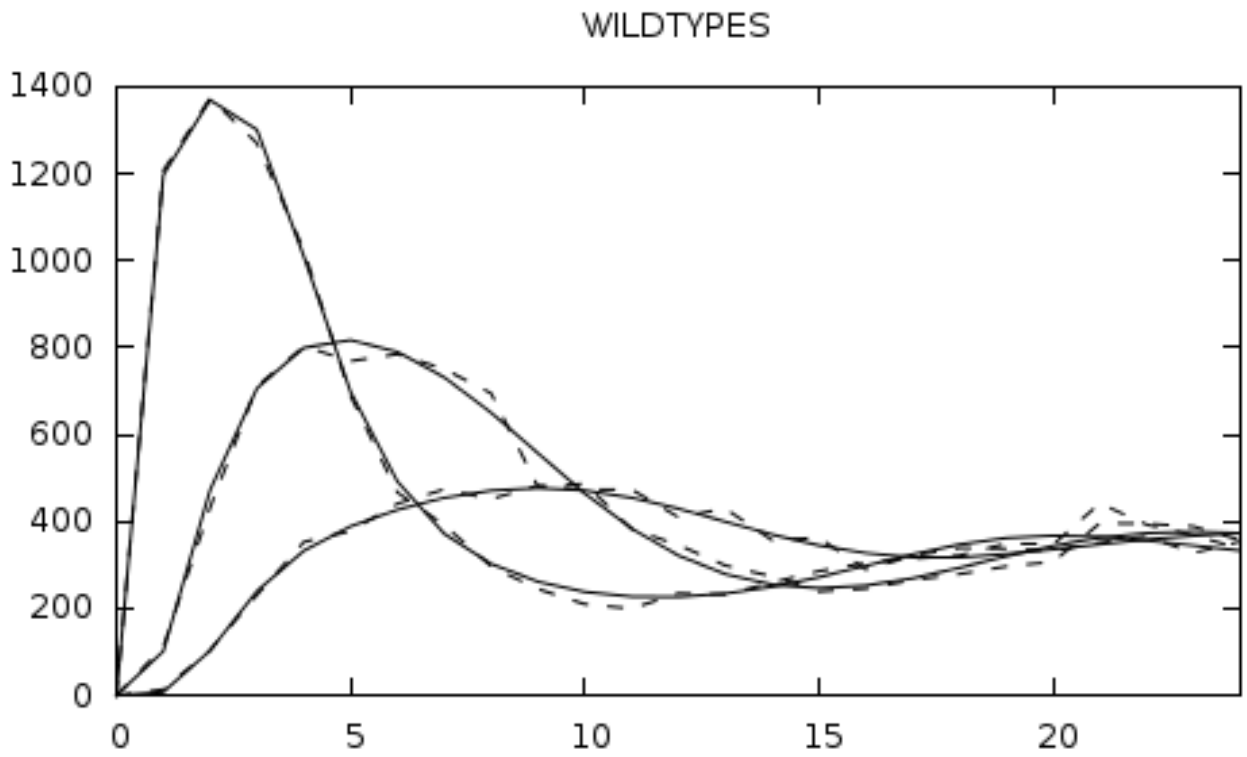
  where the value range is $\in [a, b]$.
- PIM-crossover. For every parameter:

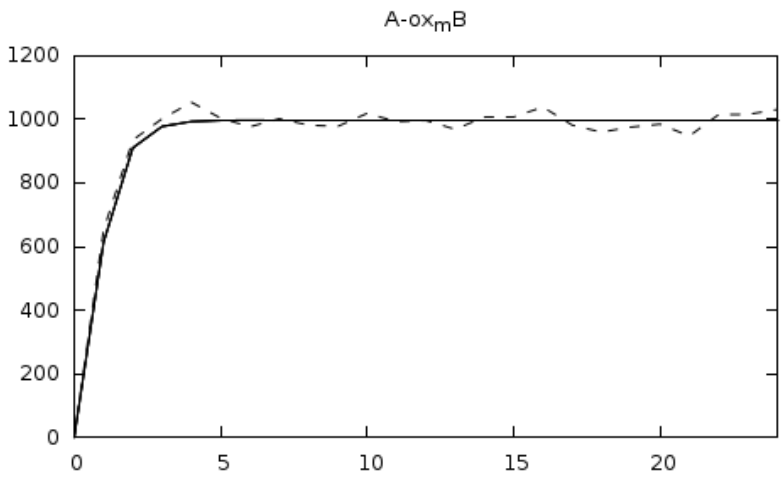
$$newvalue = (1 - r) \cdot parentA + r \cdot parentB$$

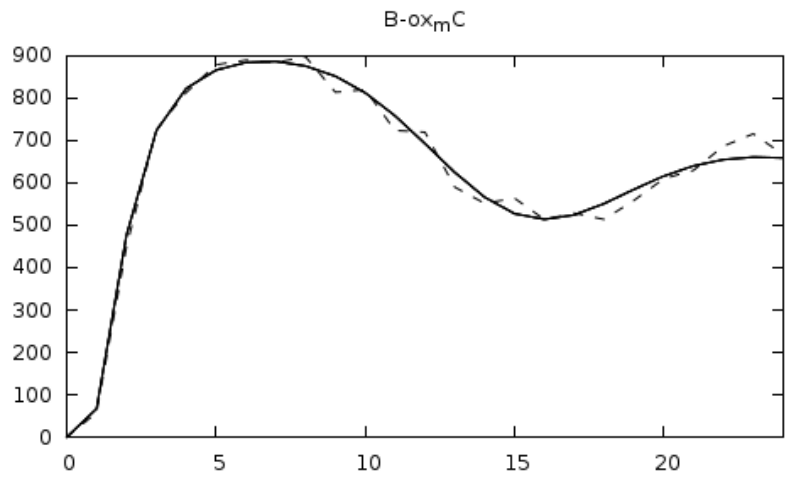
  where r is a random number $\in [0, 1]$.

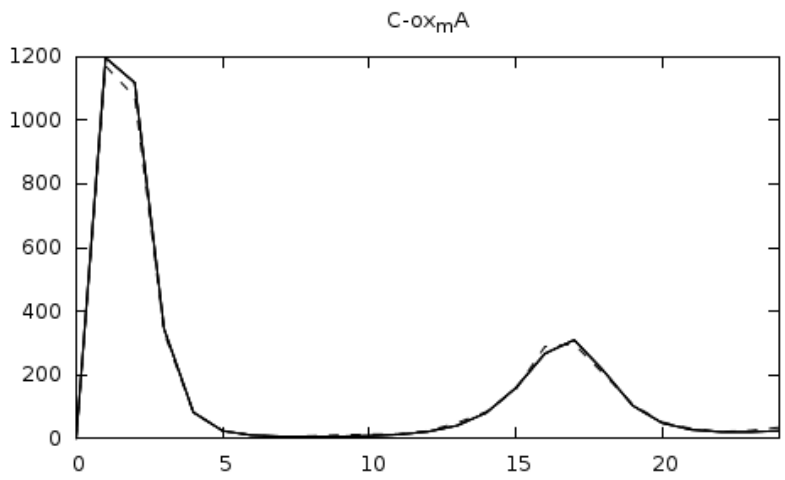
Results – Wildtypes



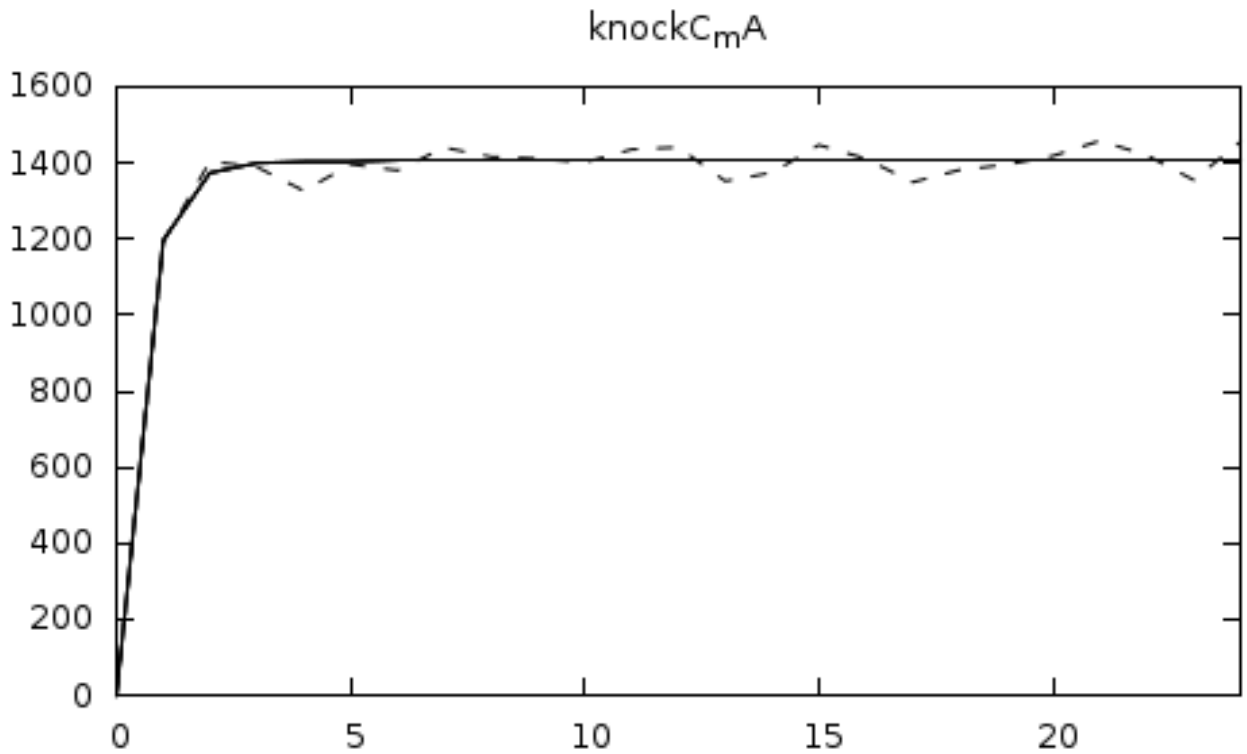
Results – Oxidation



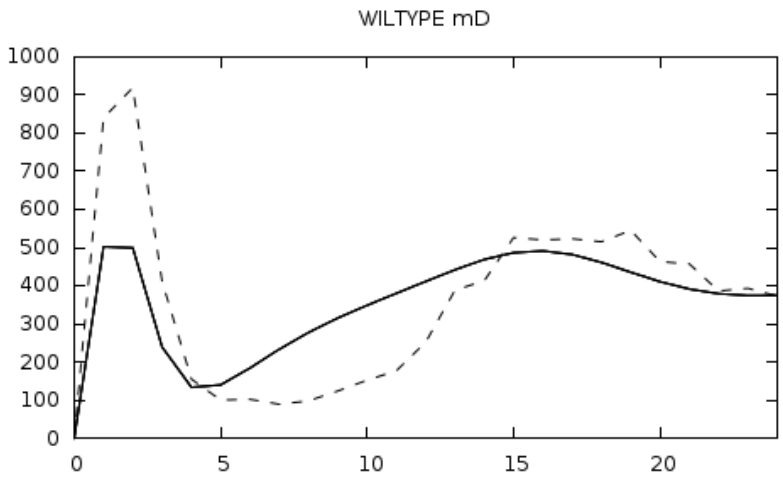




Results – Knockout



Results – D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100
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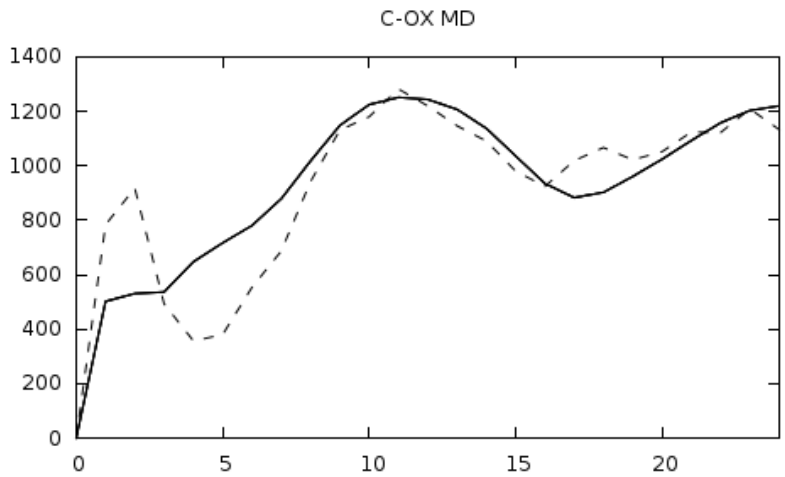
0
5
10
15
20


C-OX MD
1400
1200
1000
800
600
400
200
0
0
5
10
15
20

Results – Validation