

# **Supporting Information**

## **Integrating synthetic accessibility with AI-based generative drug design**

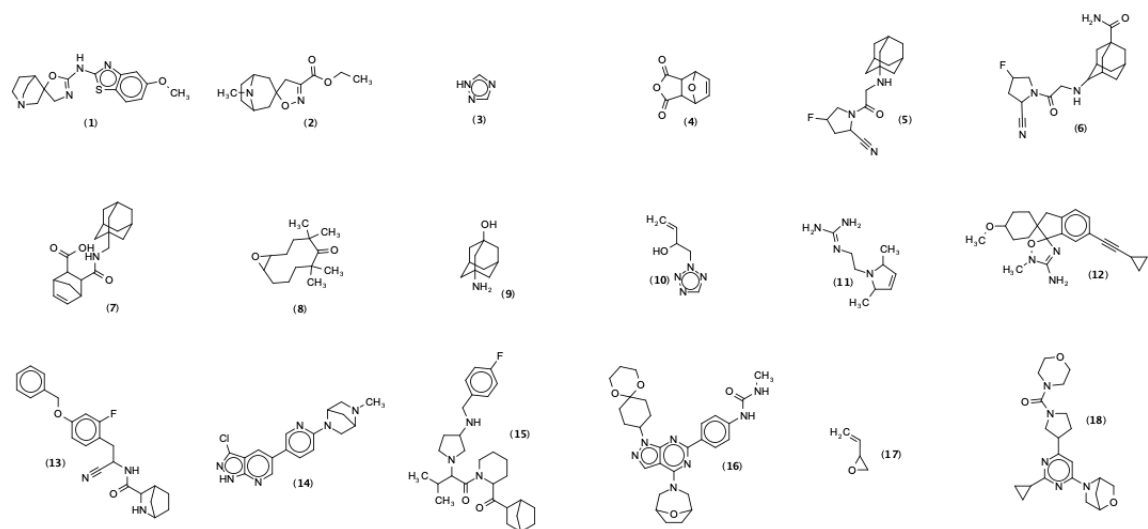
Maud Parrot<sup>1</sup>, Hamza Tajmouati<sup>1</sup>, Vinicius Barros Ribeiro da Silva<sup>1</sup>, Brian Ross  
Atwood<sup>1</sup>, Robin Fourcade<sup>1</sup>, Yann Gaston Mathé<sup>1</sup>, Nicolas Do Huu<sup>1</sup>, and  
Quentin Perron<sup>1\*</sup>

<sup>1</sup> *Iktos, 65 rue de Prony, 75017, Paris, France*

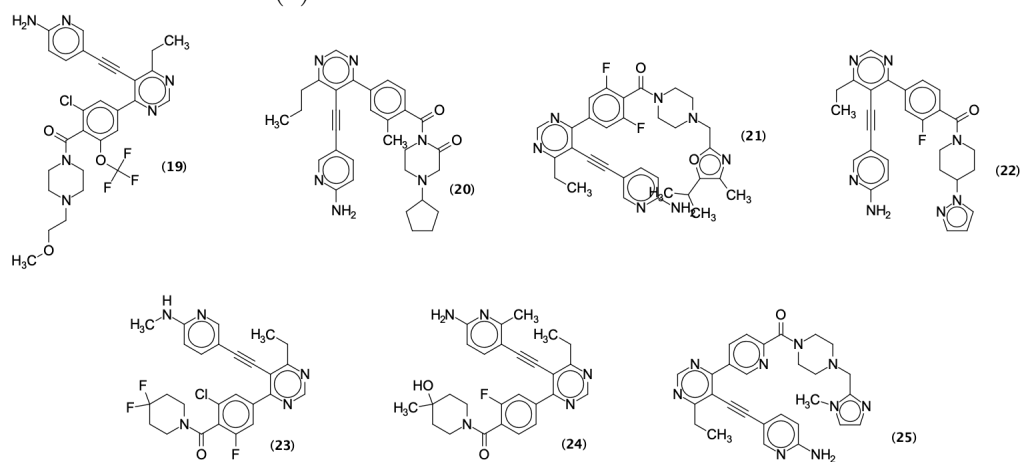
E-mail: [quentin.perron@iktos.com](mailto:quentin.perron@iktos.com)

### **1. Supporting Information available**

All code and data can be found at <https://github.com/iktos/generation-under-synthetic-constraint>.



(a) Molecules around Chembl dataset.



(b) Molecules around PI3K/mTOR dataset.

Figure S1: Example of molecules with a bad SA score ( $>3.5$ ) but a good RScore ( $>0.4$ ).

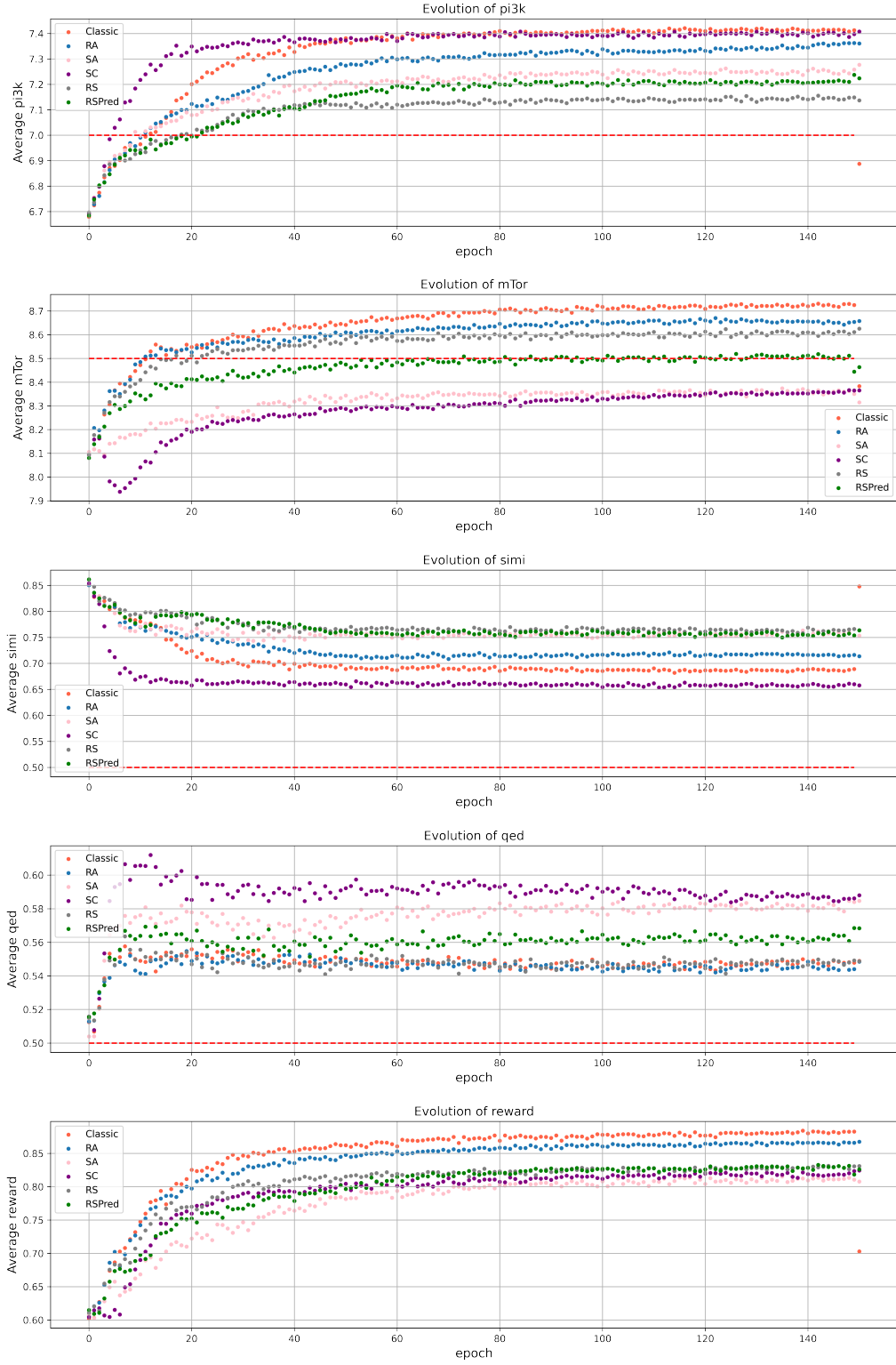


Figure S2: Evolution of 4 scoring functions : PI3K, mTOR, similarity, QED among epochs for 6 different generations around PI3K/mTOR dataset.

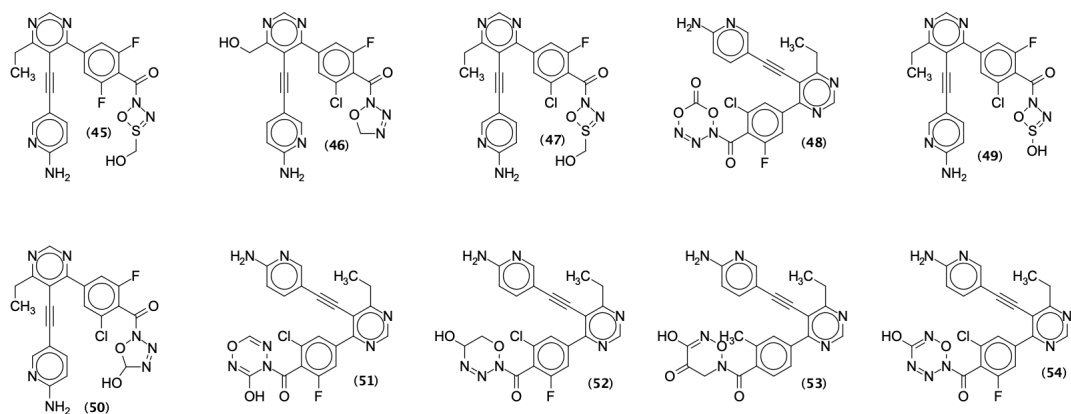


Figure S3: Top 10 molecules from PI3K/mTOR generation without any synthetic constraint.

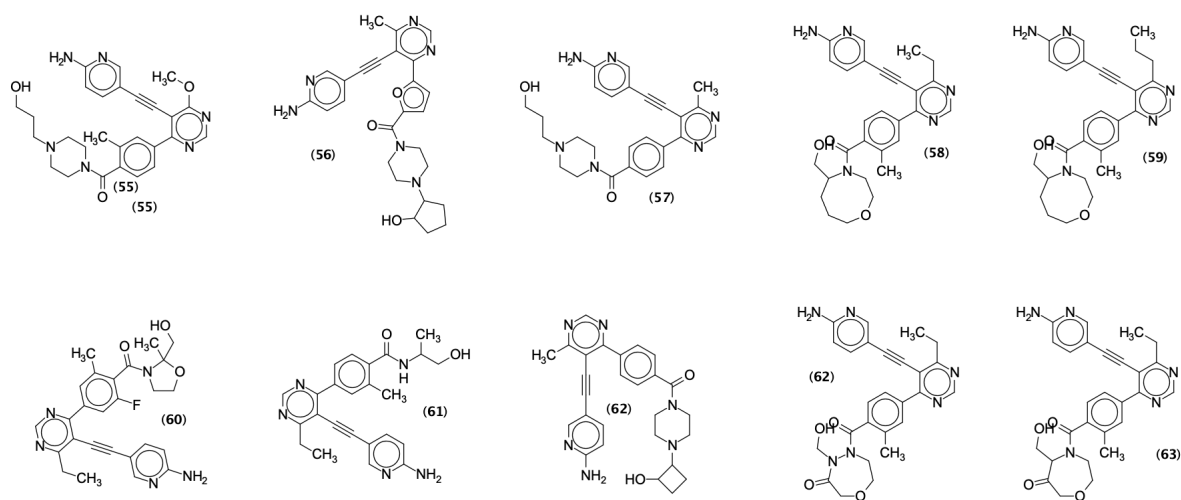


Figure S4: Top 10 molecules from PI3K/mTOR RA score constrained generation.

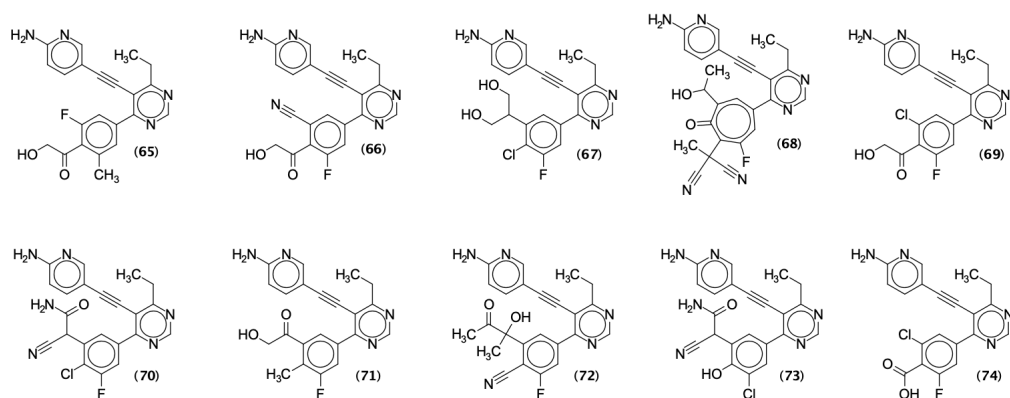


Figure S5: Top 10 molecules from PI3K/mTOR SC score constrained generation.

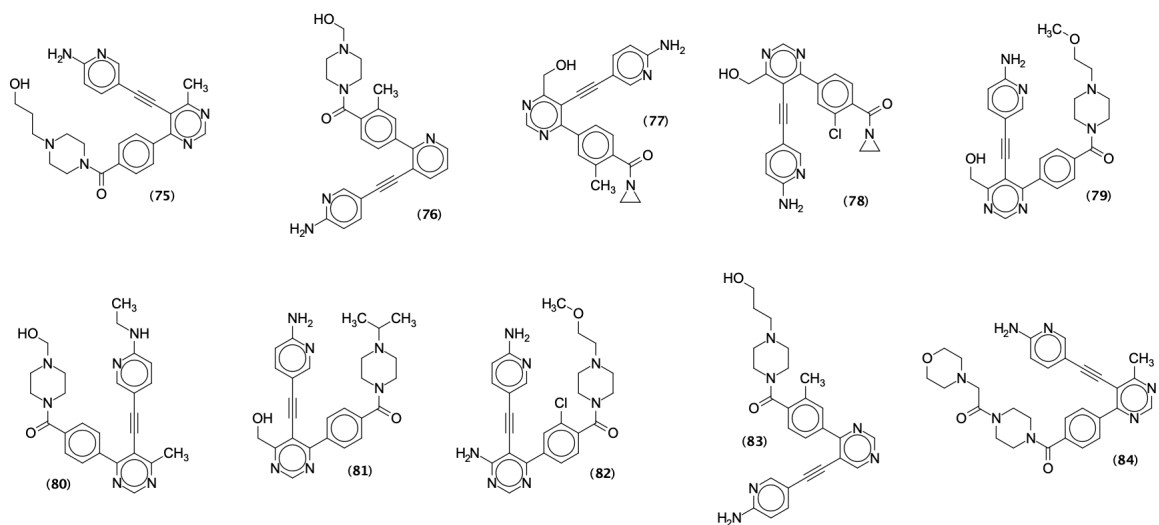


Figure S6: Top 10 molecules from PI3K/mTOR SA score constrained generation.

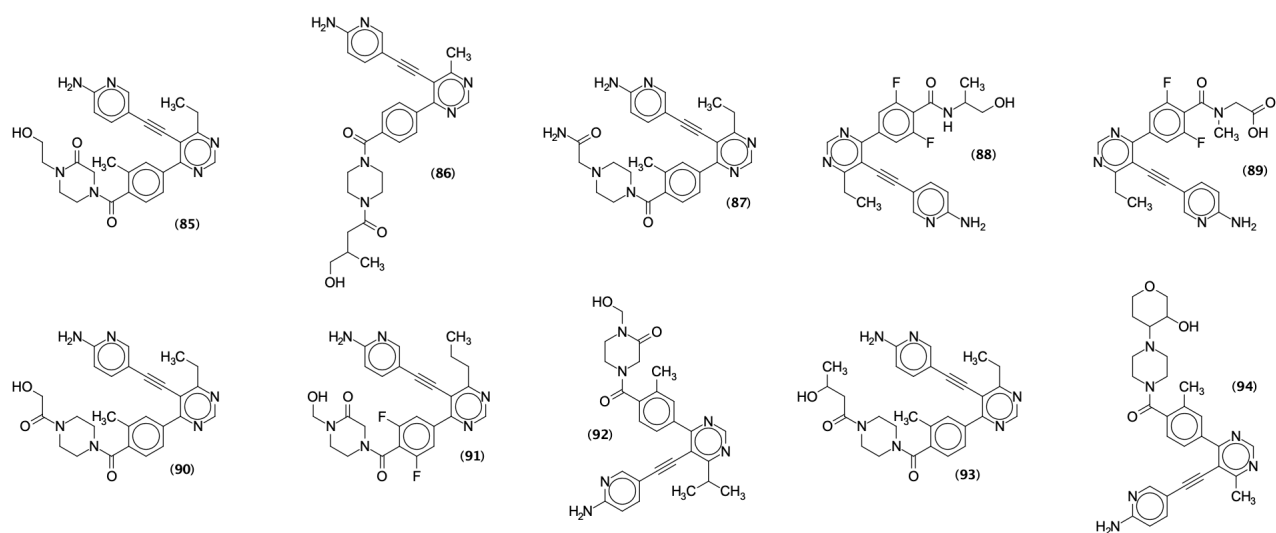


Figure S7: Top 10 molecules from PI3K/mTOR RScore constrained generation.

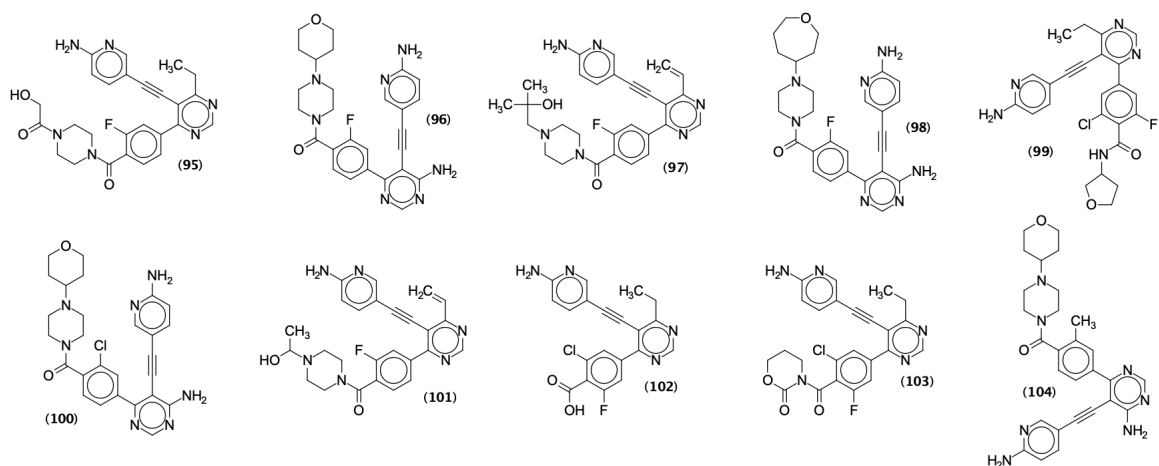


Figure S8: Top 10 molecules from PI3K/mTOR RSPred constrained generation.

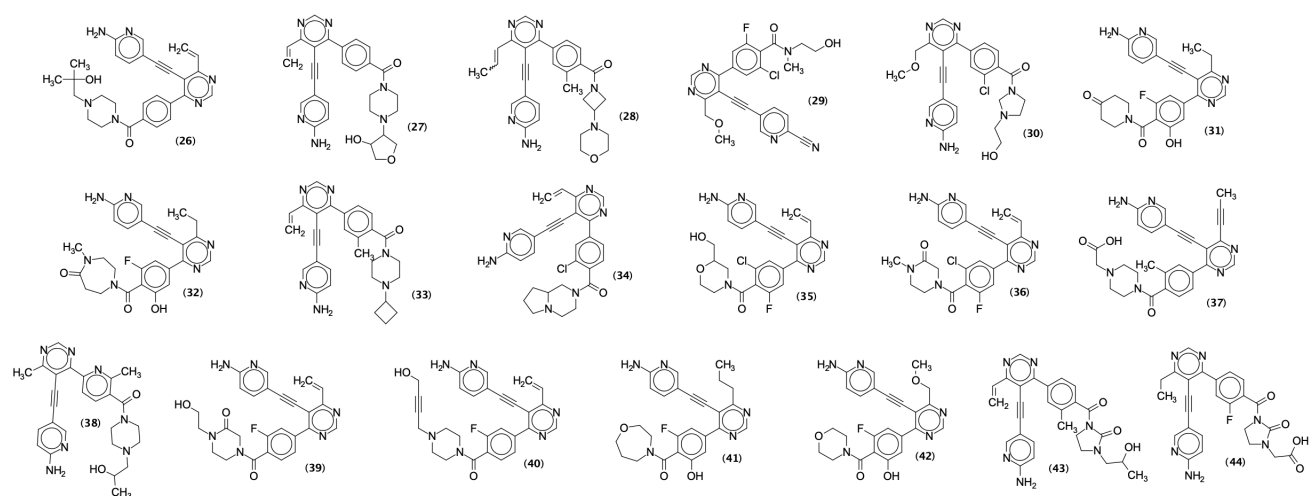


Figure S9: Molecules generated during RScore constrained generation.