


A large, colorful molecular structure composed of various spheres (blue, green, red, yellow, orange, pink, white) connected by thin white rods, set against a light blue background. The structure is positioned on the left side of the image, with a faint silhouette of a human head in profile behind it.

FROM  
MOLECULE TO  
PATIENT

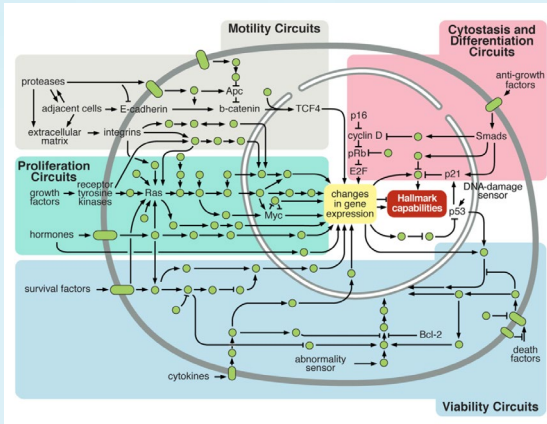
ASCPT 2019  
ANNUAL MEETING



# Connecting cell biology to patient response: clinical applications of multi-scale systems pharmacology

Co-chairs: Michael Block (Bayer) & Daniel Kirouac (Applied BioMath)

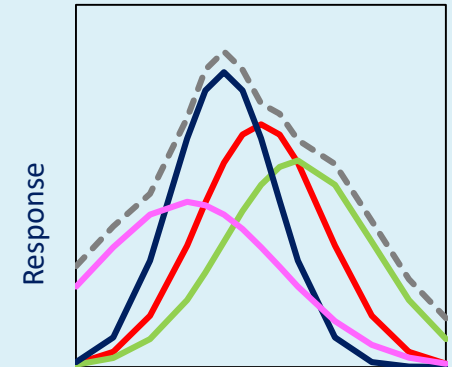
# Multi-scale systems pharmacology



*Mechanism-based model*



*Virtual Patients*



*Simulated response*

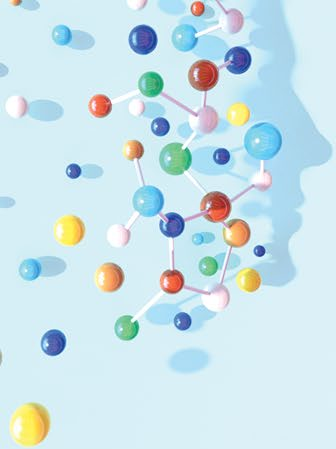


# Advancing QSP Toward Predictive Drug Development

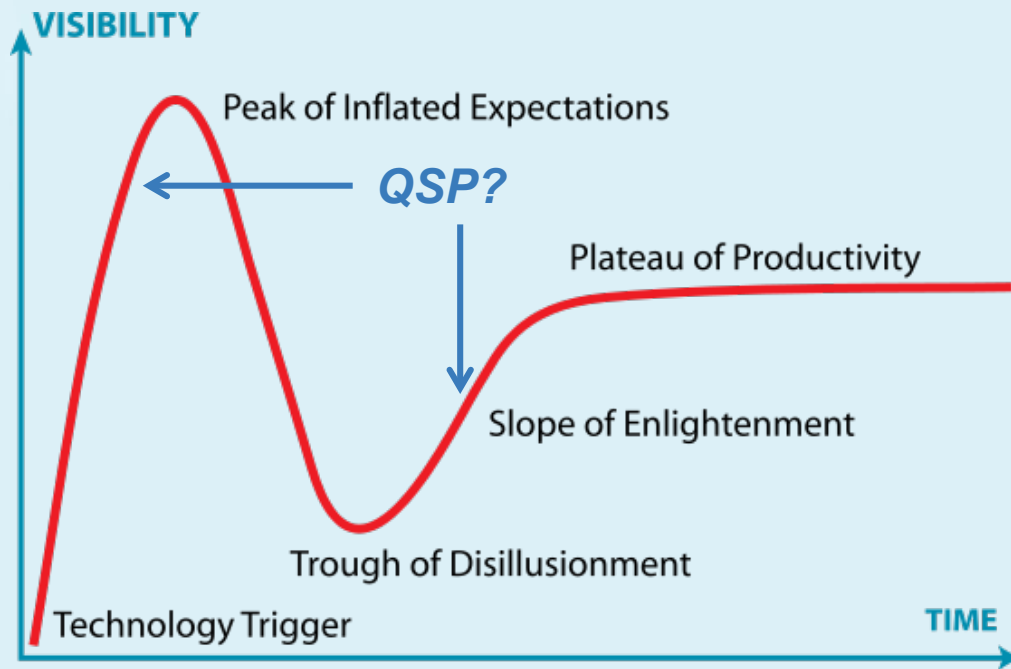
ASCPT Pre-conference, March 13<sup>th</sup>

FR  
M  
MOLECULE<sub>TO</sub>  
PATIENT

- Mechanism-based systems models (QSP) enable ***extrapolation***:
  - New patient populations, drugs, dosing regimens, combinations, biomarkers
- Mechanism-based systems models are ***intuitive*** to biologists and clinicians
  - Stakeholder engagement



# The Gartner hype cycle for emerging technologies



# Clinical applications

Cancer  
HIV



**Feilim Mac Gabhann**  
*Johns Hopkins University*

Cancer Immunotherapy



**Zvia Agur**  
*Institute for Medical Biomathematics  
Optimata Ltd.*

Hyperkalemia



**Lulu Chu**  
*AstraZeneca*

Coagulation cascade  
Immunogenicity



**Paolo Vicini**  
*Kymab Ltd.*