Table Host Handout

In Vitro Lecture and Luncheon for Students

Making New Approach Methods Work for Regulation: Linking Validation and Biological Relevance Through Adverse Outcome Pathways

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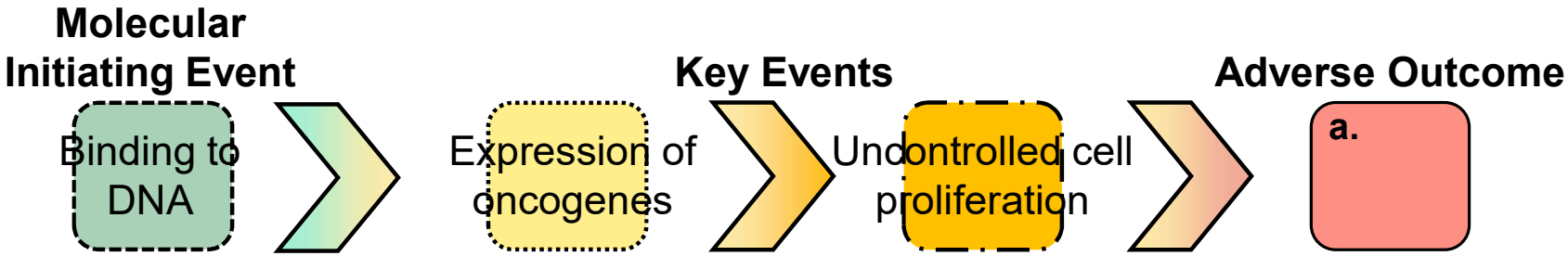
TABLE HOST—Exercise 1

Match one of the six items on the right to each gap (a-f) in the three AOPs.

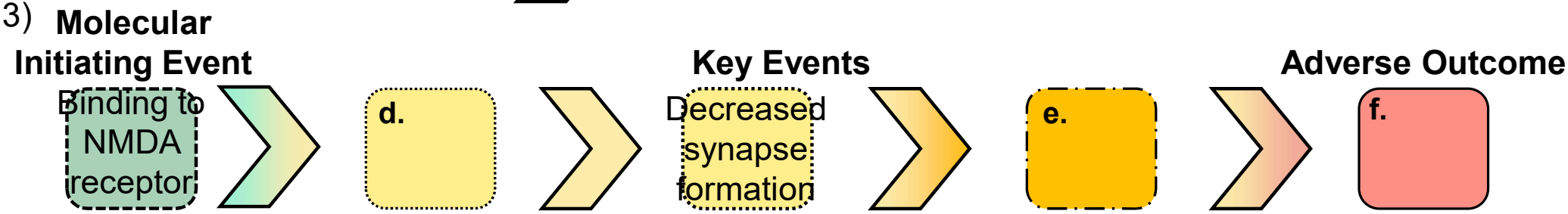
Apoptosis/ cell death	Binding to enzyme in the mitochondria	Cancer
Decreased neuronal function	Impaired learning and memory	Reduced calcium influx

1)



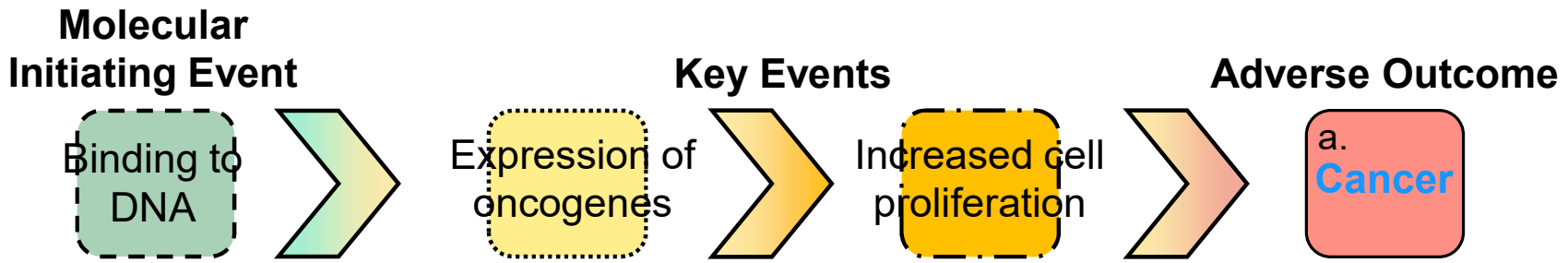
2)

3)



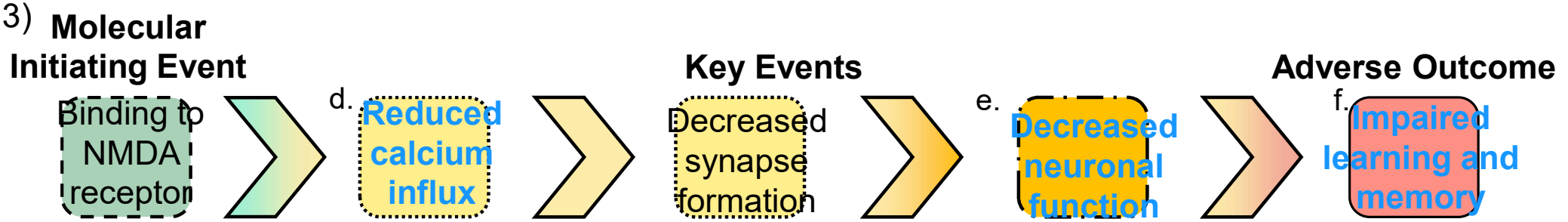
Exercise 1: Answers

1)



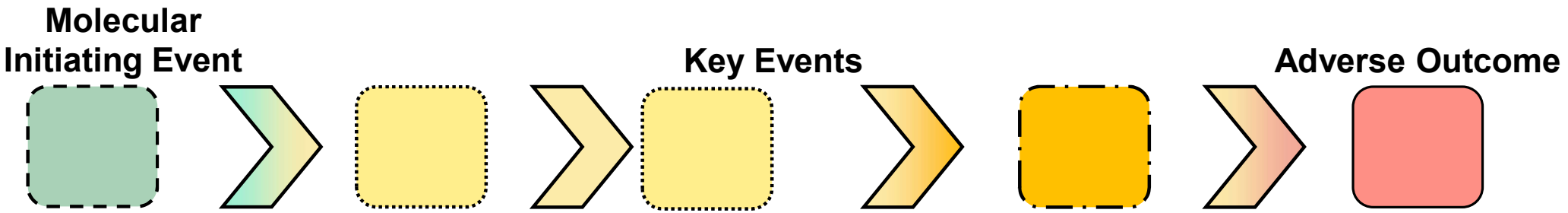
2)

3)



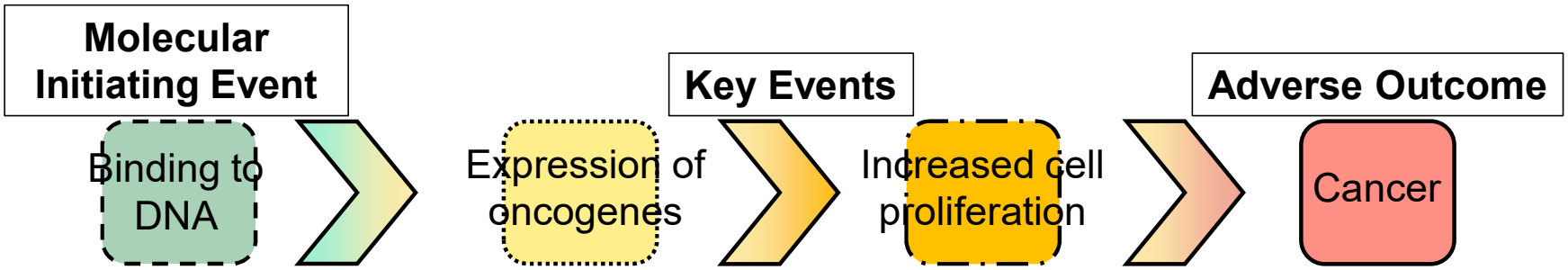
Exercise 2

Select one of the three AOPs in exercise 1, discuss and suggest types of NAMs (computational approaches, high throughput cell assays, 3D cell models, organs on chips, small model organisms), and what you could measure for the different events.



Exercise 2: Answers

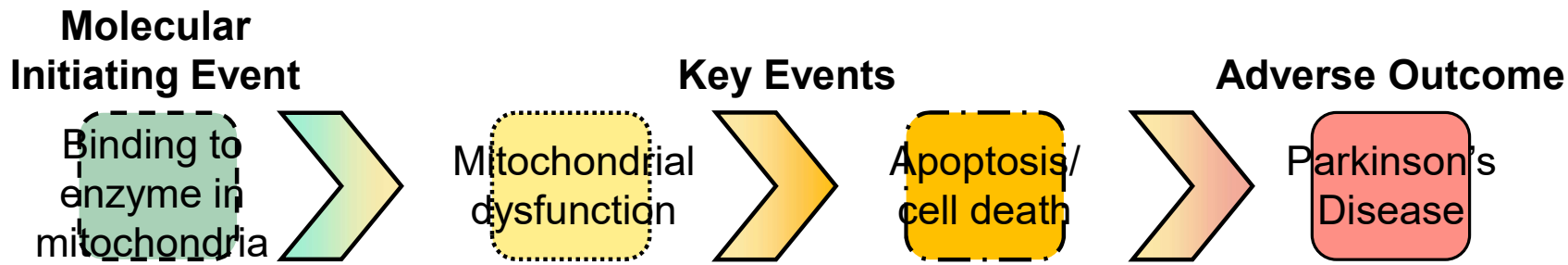
1)



Example NAM	Computer calculating if a chemical binds to DNA	High-throughput cell assay measuring expression of oncogenes	High-throughput cell assay counting number of cells	Cancer, e.g., tumor formation in small model organism such as Zebrafish

Exercise 2: Answers

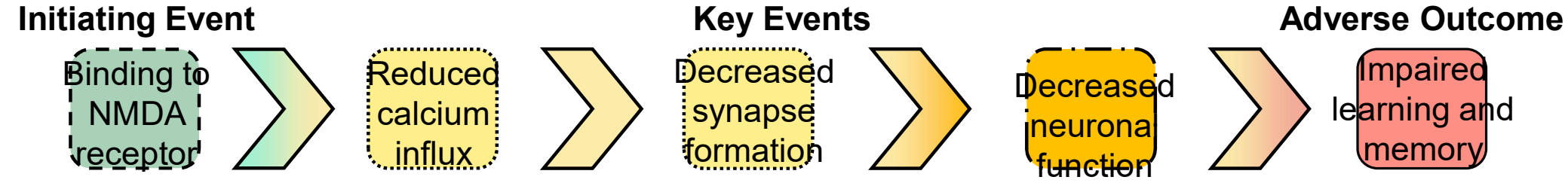
2)



Example NAM	Computer calculating if a chemical binds to enzyme in mitochondria	High-throughput cell assay measuring mitochondrial function (e.g., ATP)	High-throughput cell assay counting number of alive and dead cells	Measuring number of neurons (dopaminergic) in small model organism such as Zebrafish or nematode

Exercise 2: Answers

3) **Molecular**



Computer model calculates if a chemical will bind to the NMDA receptor	High-throughput cell assay measures amount of calcium (e.g., by fluorescent dye)	High-throughput cell assay counting number of synapses	3D cell model on chip recording electrical activity of neurons (function)	Recording swimming behavior (distance and speed) of Zebrafish embryos