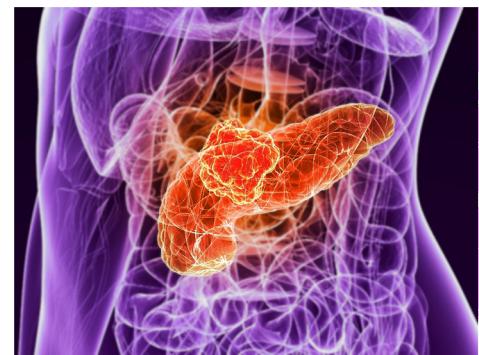


HADACA – Health Data Challenge

Deconvolution methods to quantify tumor heterogeneity



Pancreatic Adenocarcinoma (PDAC)



- Incidence ~450K new cases/y worldwide, ~14k in France

- 4th cause of cancer-related death, expected to be the 2nd (2030)

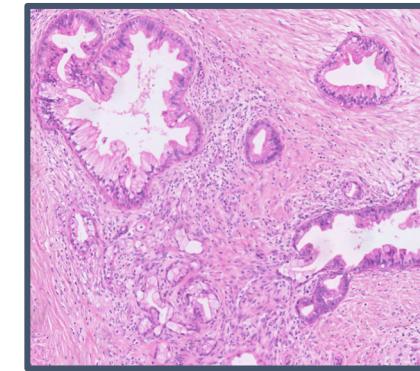
60% to 95%
of stromal cells

4.6 MONTHS
MEDIAN SURVIVAL

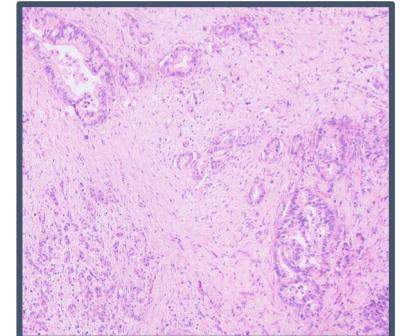
In Europe

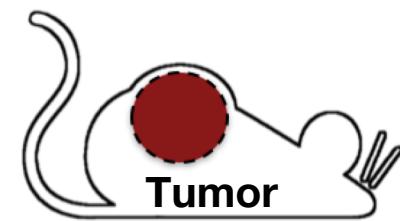


5 year
survival

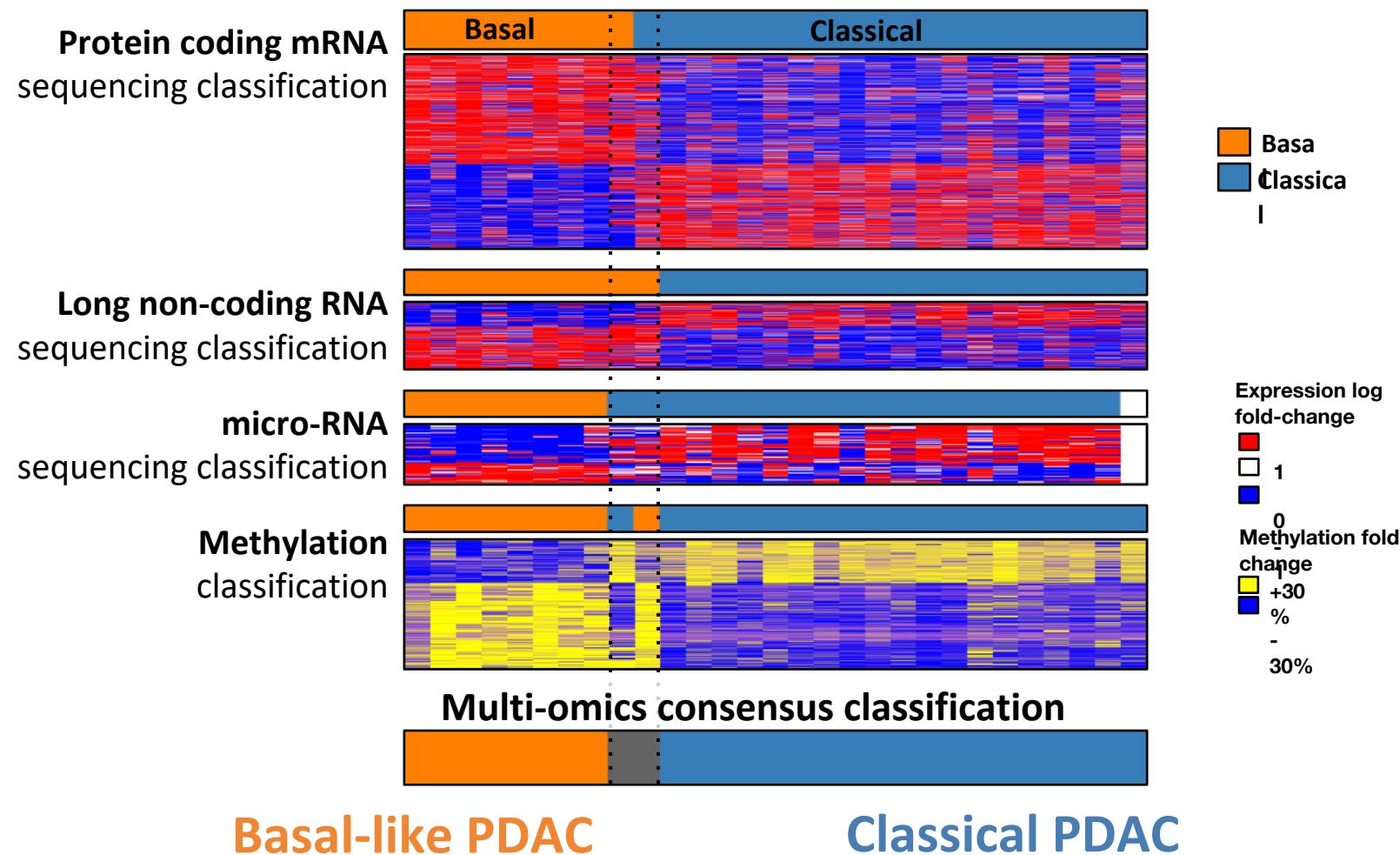


- Only 15% patients with resectable tumors (=operable)
- 90-70% of non-responder patients (Gemcitabine/Folfirinox)

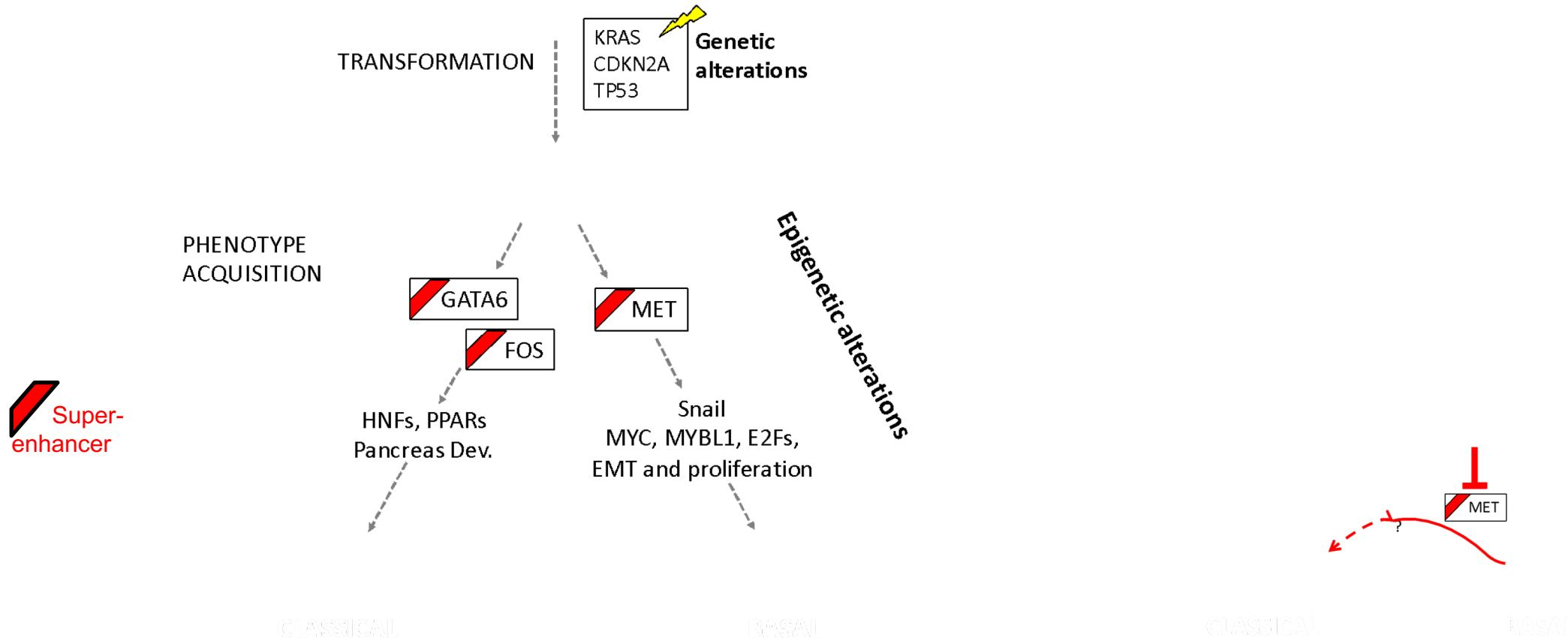




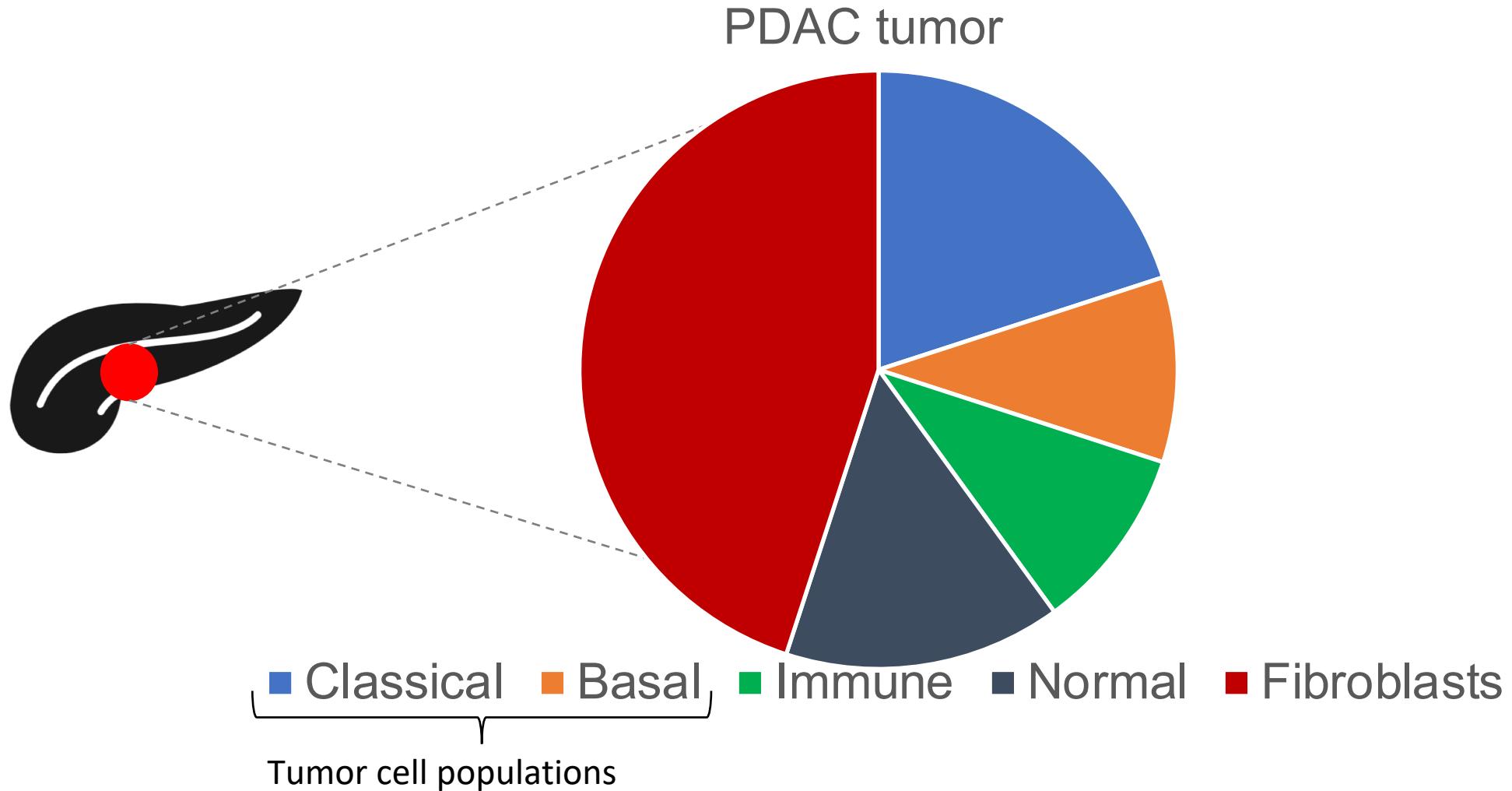
Strong convergence of omics classification



Epigenetic model of pancreatic tumor cell phenotype establishment



PDAC tumor composition



Simulations

D	Patients
Sites	
=	

T	Types
Sites	
X	

A	Patients
Types	

Simulations

T	Types
Sites	

Median profile of the different cell types:

- Normal pancreas (C1 + C2)
- Immune cells (C1 + C2)
- Fibroblasts (C2)
- Classical tumor (C1 + C2)
- Basal tumor (C2)

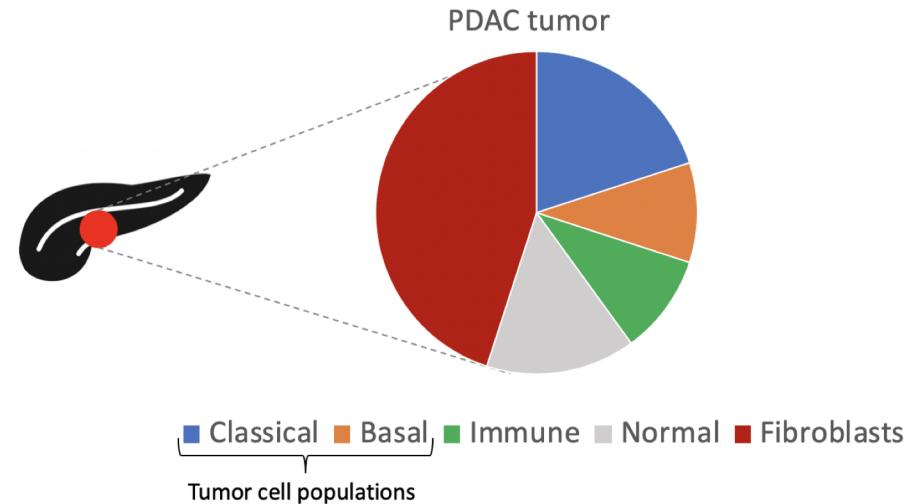
Simulations

A	Patients
Types	

Dirichlet profiles

Challenge 1 :
45% tumor,
10% IC,
45% fibro

Challenge 2 :
15% normal,
45% fibro,
10% IC,
30% tumor -> different ratios classic/basal between 50/50 and 90/10



Simulations

D	Patients
Sites	
=	

T	Types
Sites	
X	

A	Patients
Types	

Adding of a gaussian noise on D: sd 0.1

Restitution on challenge #2

Organize your own data challenge
