

OncoSuisse Meeting | Bern | 27.06.2022

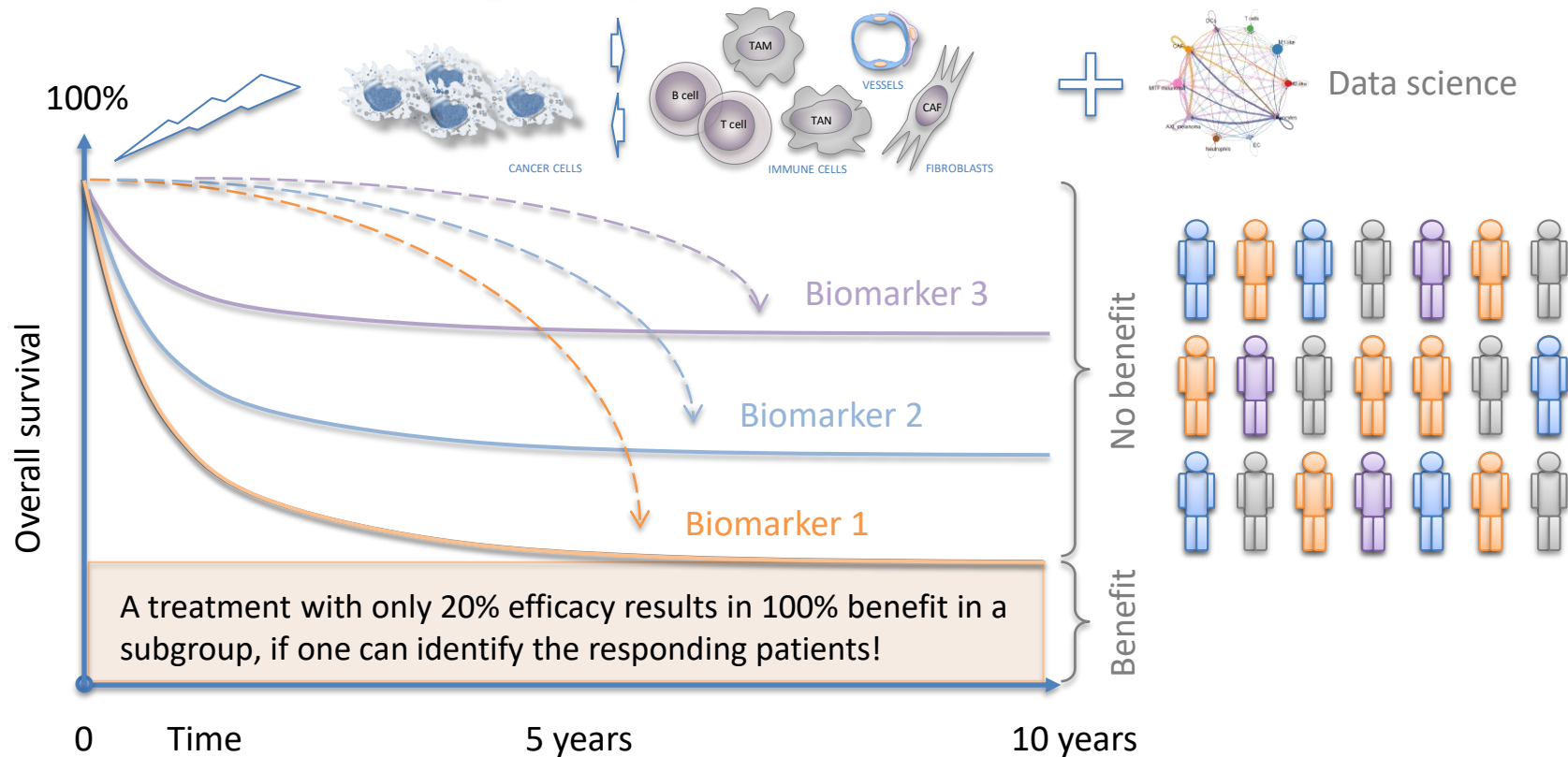
Swiss Personalized Oncology National Data Stream SPHN Project

Prof. Olivier Michelin, MS, MD-PhD
Head of Precision Oncology Center – Lausanne
Prof. Bernd Bodenmiller, PhD
ETH – Zurich

Unil
UNIL | Université de Lausanne



Precision oncology & predictive biomarkers

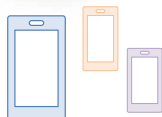


Precision oncology: integrating multiple data streams

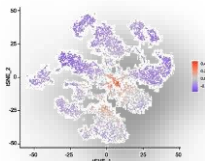
Clinical data



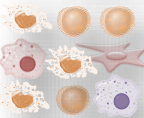
Patient reported outcome



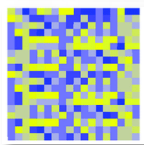
Genomics/
Other -omics



Digital pathology



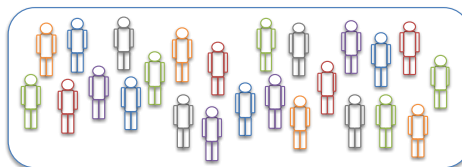
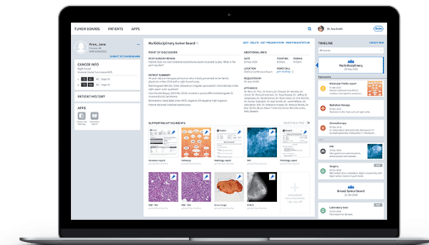
Radiomics



Data integration



Clinical decision support



Reference data set

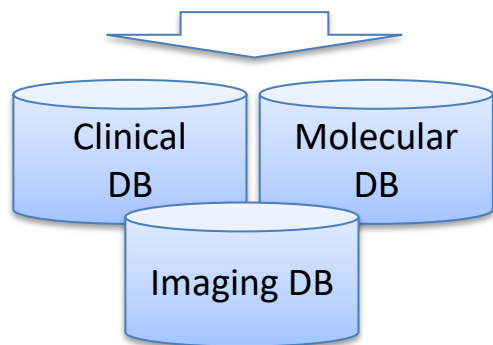


Patient care

Data strategy for SPO/SPHN: Minimal Data Set (MDS)

- Each hospital is adapting the cancer patient's information flow to generate the MDS automatically, insuring the sustainability of the SPO program

Electronic Patient Record



#	Group	Data Category	Required Single Data Point
1	DEMOGRAPHIC	Demographic	Year of birth
2			Gender
3	1st DIAGNOSIS	Classification	First date of diagnosis (Biopsy or Main Tumor)
4			CIM 10
5			ICD-O3 / Morphology
6		ICD-O3 / Topography	
7		Free text diagnosis	
8		TNM classification	
9	Staging	TNM Version	
10		Stage	
11		Staging system	
12		Grade	
13		Grading system	
14	TREATMENT	Therapy	Type of treatment
15			Date of treatment
16			Treatment specification
17	RESPONSE	Outcome	Method of assessment
18			Date of assessment
19			Results from the assessment (RECIST 1.1)
20			Updated stage
21			Staging system
22	SURVIVAL	PFS	Follow-up event
23			Date of follow-up event
24			Date of event
25		OS	Event type

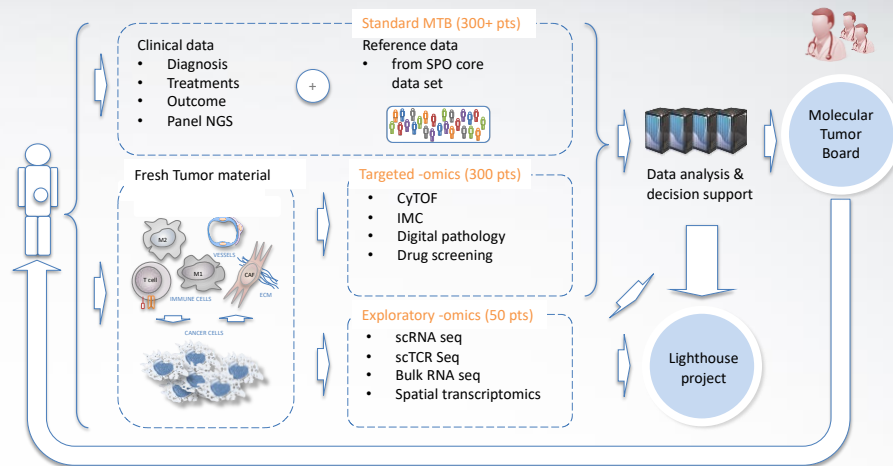


Local infrastructure @
Hospital X: heterogeneous

Interoperable MDS @
Hospital X: fully interoperable

Mutualisation via
SPO/SPHN

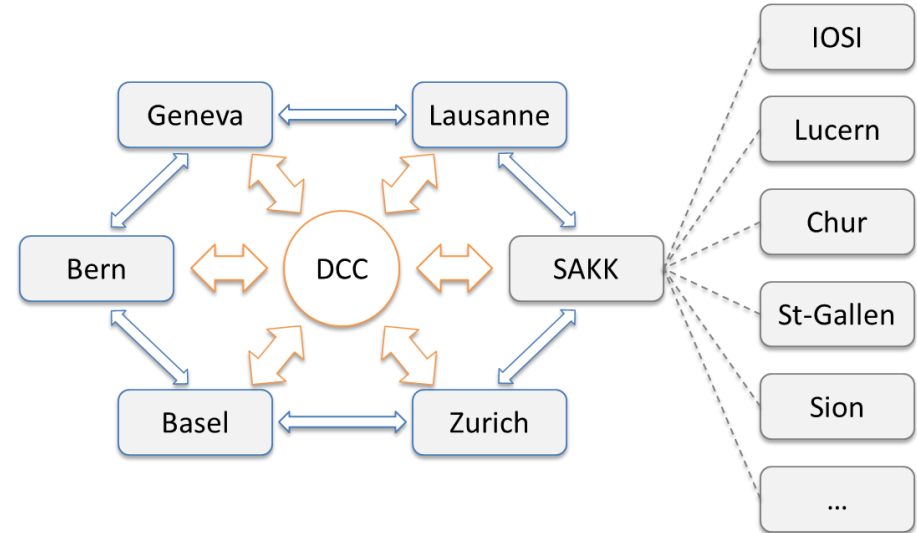
Goals of the SPO-NDS proposal



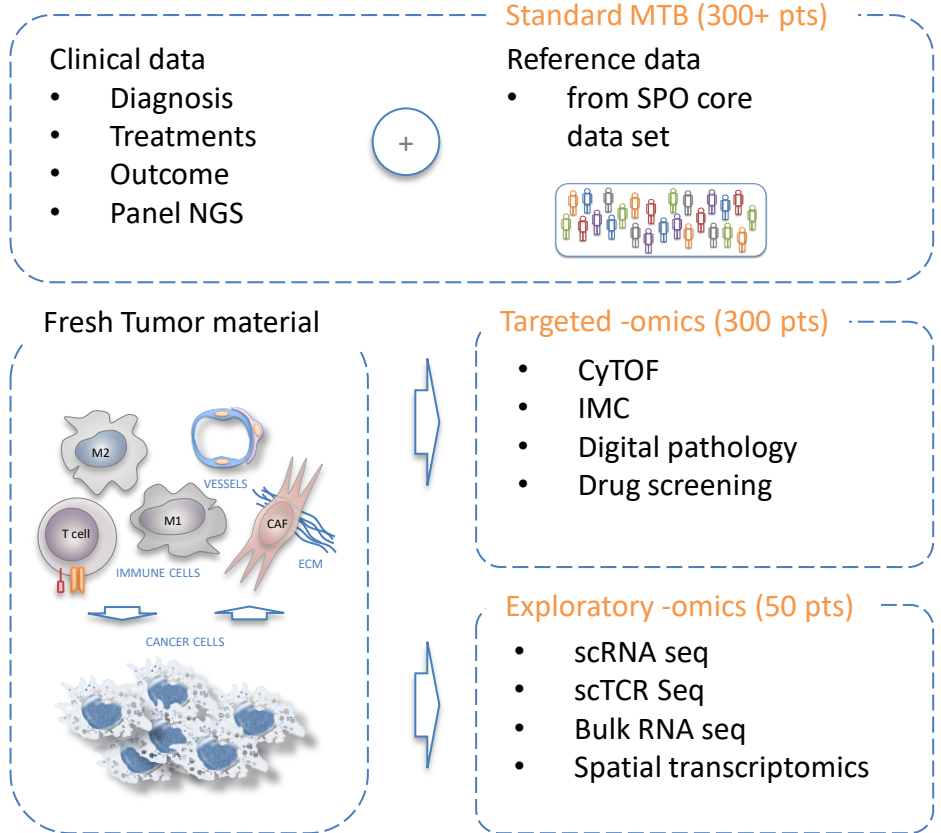
SPO-NDS Overview: Objectives

Assemble 4 cohorts of specific cancer types treated with immuno-oncology (IO) therapies within the SPO national network to:

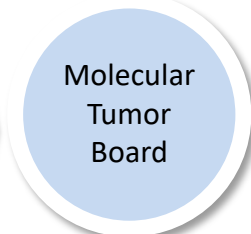
- Create a direct link to patient care, allowing new treatment opportunities for patients who have escaped standard of care therapies or for whom several standard of care options exist without a rationale for selection
- Identify the mechanisms of primary and acquired immunotherapy resistance within and between tumors with different immune-reactivities (Lighthouse project)



SPO National Network



SPO-NDS

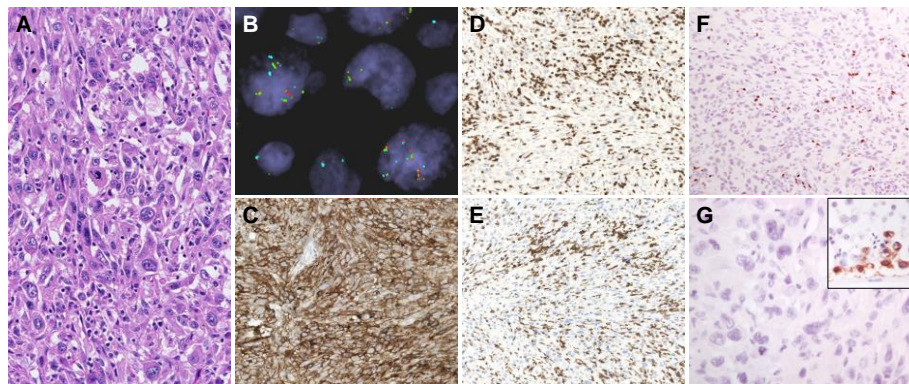


Data analysis & decision support



Molecular Tumor Board: example of clinical outcome

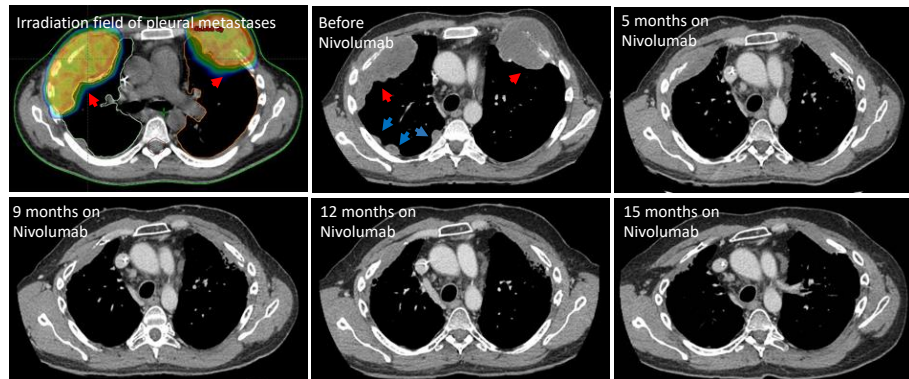
- Personalization focusses strongly on immuno-oncology
- Example of molecular tumor board case:
 - MPNST with PD-L1 amplification presenting a near CR on PD-1 blockade¹
 - Patient followed in the private sector (Dr. Bohanes)



Deep response to anti-PD-1 therapy of metastatic neurofibromatosis type 1-associated malignant peripheral nerve sheath tumor with *CD274/PD-L1* amplification

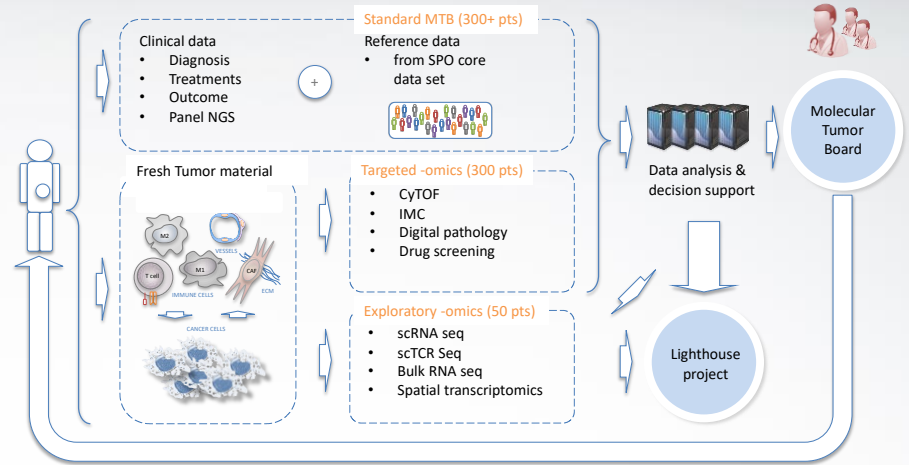
Berna C. Özdemir^{1,2}, Pierre Bohanes³, Bettina Bisig⁴, Edoardo Missiaglia⁴, Petros Tsantoulis⁵, George Coukos^{1,6,7}, Michael Montemurro¹, Krisztian Homicsko^{1,6,7}, Olivier Michielin^{1,6,7}

COPY NUMBER VARIATIONS (CNV)*			PD-L1
REGION	GENES	TYPE OF VARIATION	ESTIMATED COPY NUMBER PER CELL
9p24-p23	<i>JAK2, CD274, PTPRD</i>	Amplification	≥5
9p22-p21	<i>CDKN2A, CDKN2B, FANCG</i>	Deletion	1
9q	All genes in the region	Amplification	≥5
11q	All genes in the region	Amplification	≥5



¹Ozdemir, *JCO PO* 2019

Governance



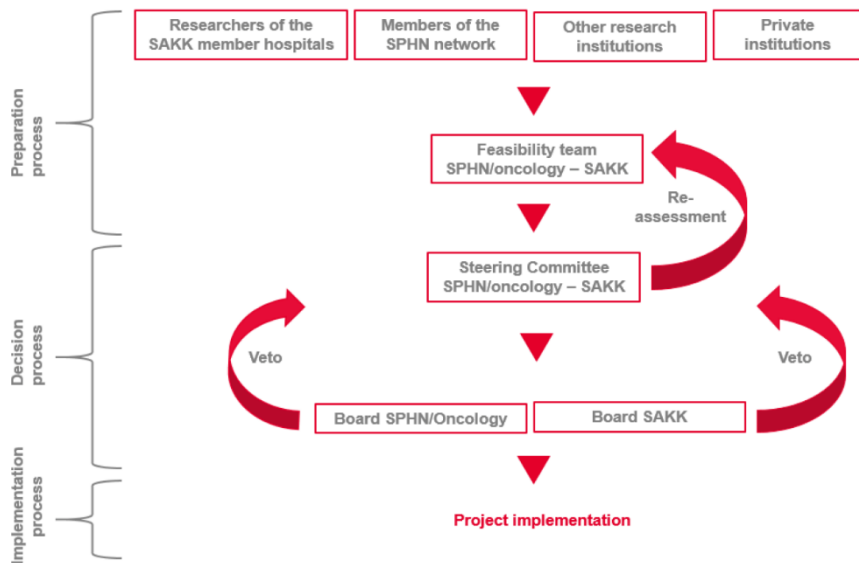
Governance: SPO-NDS built on SPO Driver Project

- **Amended** Ethic protocol (submitted to EKNZ on 25.02.2022)
- **Amended** Consortium Agreement (CA), including also:
 - **Amended** Data Transfer and Use Agreement (DTUA)
 - **Amended** Data Transfer and Processing Agreement (DTPA)
 - **Material Transfer Agreement (MTA)**
 - Amended CA will be soon send out to the legal departments for approval
- Governance Board:
 - Executive Board (members: one representative of each Data Provider)
 - Scientific Board (members: one representative of each Party)
 - PPI Advisory Board

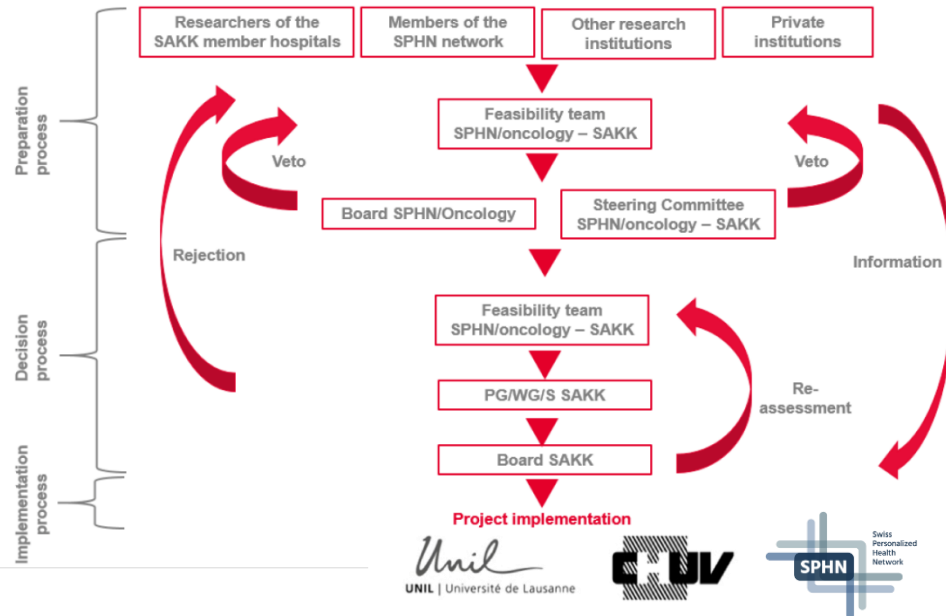
Data Governance (SPO-NDS & SCORED)

- For data access requests that involve both SPO-NDS datasets and the SCORED database developed by SAKK, specific approval processes and workflows have been defined (see Collaboration Guidelines SPO SAKK)

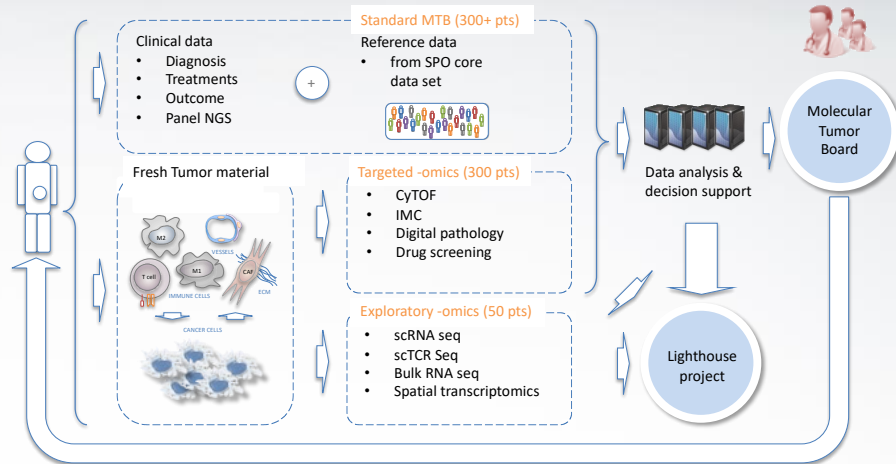
1) Submission process for research projects of retrospective data analysis



2) Submission process for registry projects (new variables or new patients)



SPO-NDS: Lighthouse project



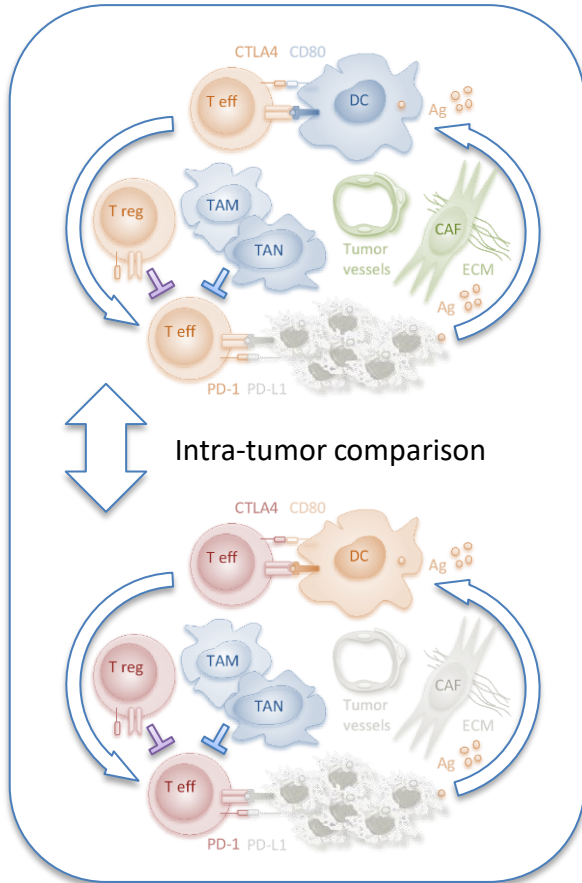
Lighthouse research project (WP4)

Research question: What are the mechanisms of primary and acquired immunotherapy resistance within and between tumors with different immunoreactivities?

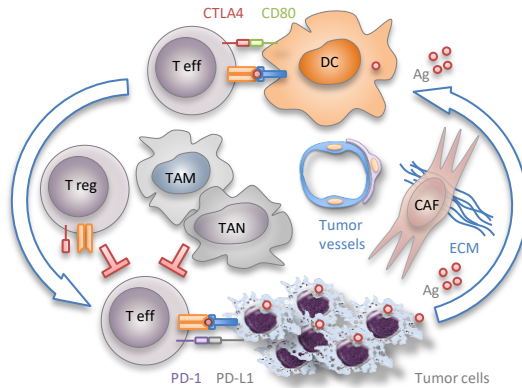


Comparative immune-oncology approach at the single-cell and multi-omics levels to identify **shared features of primary and acquired resistance to IO**. In particular, we will compare the cancer-immune ecosystems of patients and tumors that respond well to IO to those who fail to mount antitumor immune responses to IO.

Lighthouse research project (WP4)

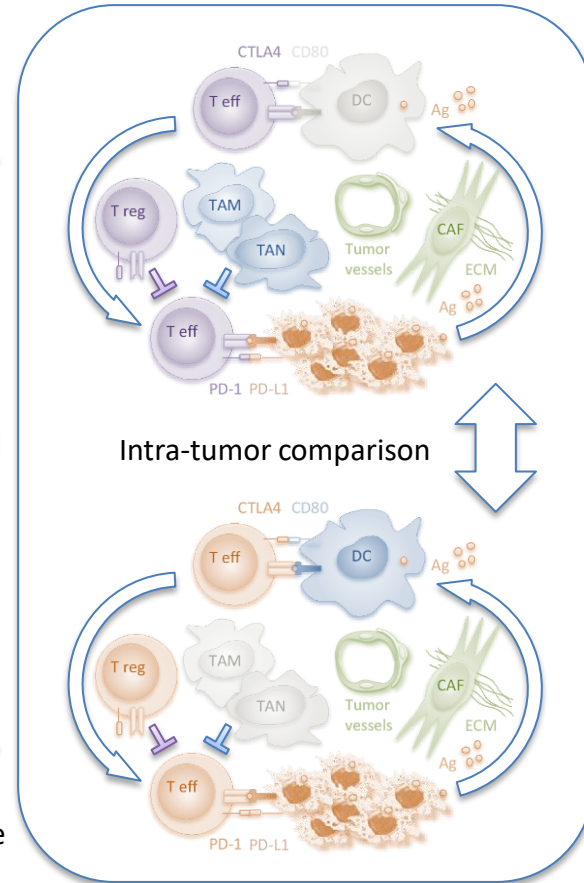


Tumor comparison

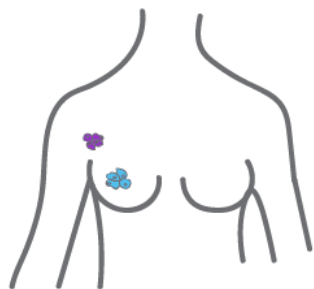


IO non sensitive tumor

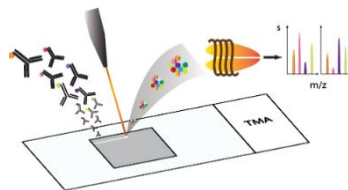
IO sensitive tumor



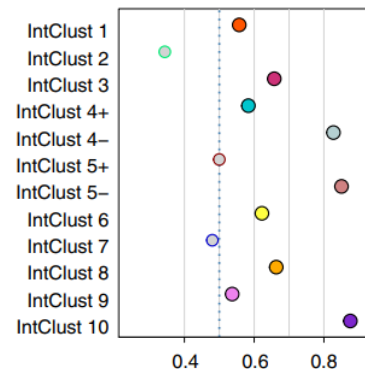
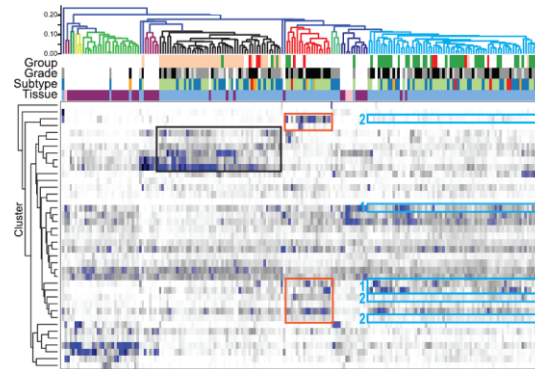
Example of IO predictive biomarker for breast cancer



Primary breast cancer



144 patients CyTOF
693 IMC



Patient group identification
for immune checkpoint therapy

SPO-NDS Applicants

Olivier Michielin (CHUV, UNIL, SIB)

Bernd Bodenmiller (ETH, UZH)

Momo Bentires-Alj (UniBas, USB)

Mitch Levesque (USZ, UZH)

Andreas Wicki (USZ, UZH)

George Coukos (CHUV, UNIL, EPFL)

Nora C Toussaint (ETH, Nexus)

Berend Snijder (ETH)

Bram Stieltjes (USB)

Christian Britschgi (USZ)

Petros Tsantoulis (HUG)

Simon Haefliger (Insel)

Patrick Ruch (HES-SO)

Christian Lovis (HUG)

Miklos Pless (SAKK)

Martin Reist (SAKK)

Cristina Golfieri (UniBas)

Sylvain Pradervand (CHUV, UNIL, SIB)

Collaborators:

Jane Shaw (Global Patient Advocate Lead)

Manuela Eicher (CHUV)

Viola Heinzelmann (USB)

Mikael Pittet (HUG/UNIGE)

Raphael Gottardo (CHUV/UNIL)

Santiago Carmona (UNIL)

Jacques Fellay (EPFL)

Andrew Janowczyk (CHUV/UNIL)

Walter Weber (USB)

Sacha Rothschild (USB)

Benjamin Kasenda (USB)

Heinz Läubli (USB)

Marcus Vetter (USB)

Bourquin Jean-Pierre (USZ)

Renella Raffaele (CHUV/UNIL)

Christian Kurzeder (USB)


Matthias Matter (USB)

Mark Rubin (UniBe)

Gaspard Pardon (EPFL)

Christoph Merten (EPFL)





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THANK YOU FOR YOUR
ATTENTION!

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Vaud

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