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Disclosure Information Relationships with Companies

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No relationships to disclose

Disclosure Information

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Fox Chase Cancer Center



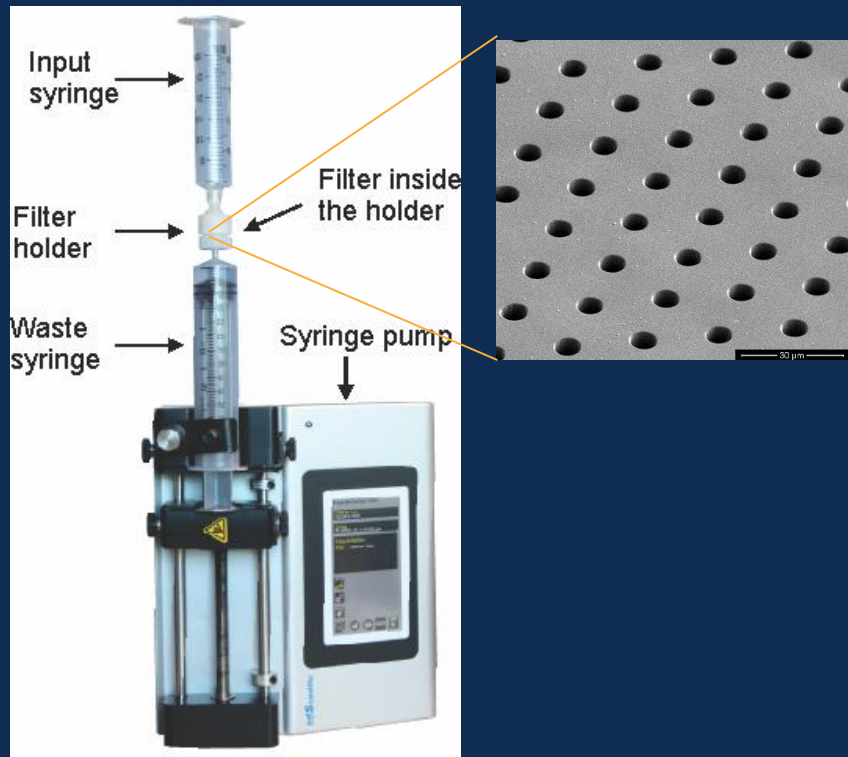
Cancer associated macrophage-like cells are prognostic indicators of OS and PFS in a variety of solid malignancies

Daniel L. Adams, Diane K. Adams, Steven H. Lin, Massimo Cristofanilli, Raymond C. Bergan, Jeffrey Marks, Stuart S. Martin, Saranya Chumsri, Thai H. Ho, Rena G. Lapidus, Susan Tsai, Cha-Mei Tang, and R. Katherine Alpaugh

Cancer associated macrophage-like cells (**CAMLs**)

- CAMLs are a new blood-based biomarker for use in a variety of solid tumors at any stage
- CAMLs appear highly prognostic for Overall Survival (OS) and Progression Free Survival (PFS)

CellSieve™ Microfilters



Uniform 7 μm pore size and distribution with high porosity

- Rapid, consistent and gentle flow
- 3 min to filter 7.5 ml of blood
- Blood stable for 96 hours
- Isolate Circulating Tumor Cells and Circulating Stromal Cells

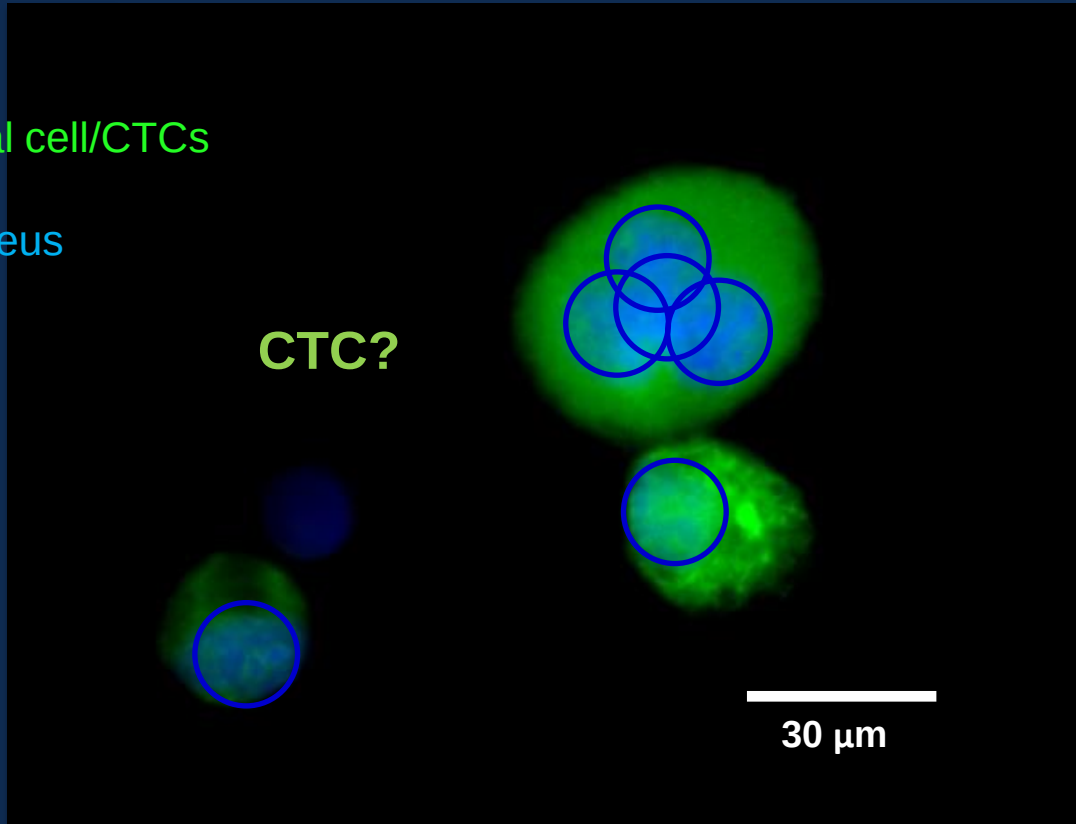
Multiple circulating tumor cell subtypes exist

Cytokeratin

marker for epithelial cell/CTCs

DAPI

marker for the nucleus



Circulating tumor cells & circulating stromal cells

Cytokeratin

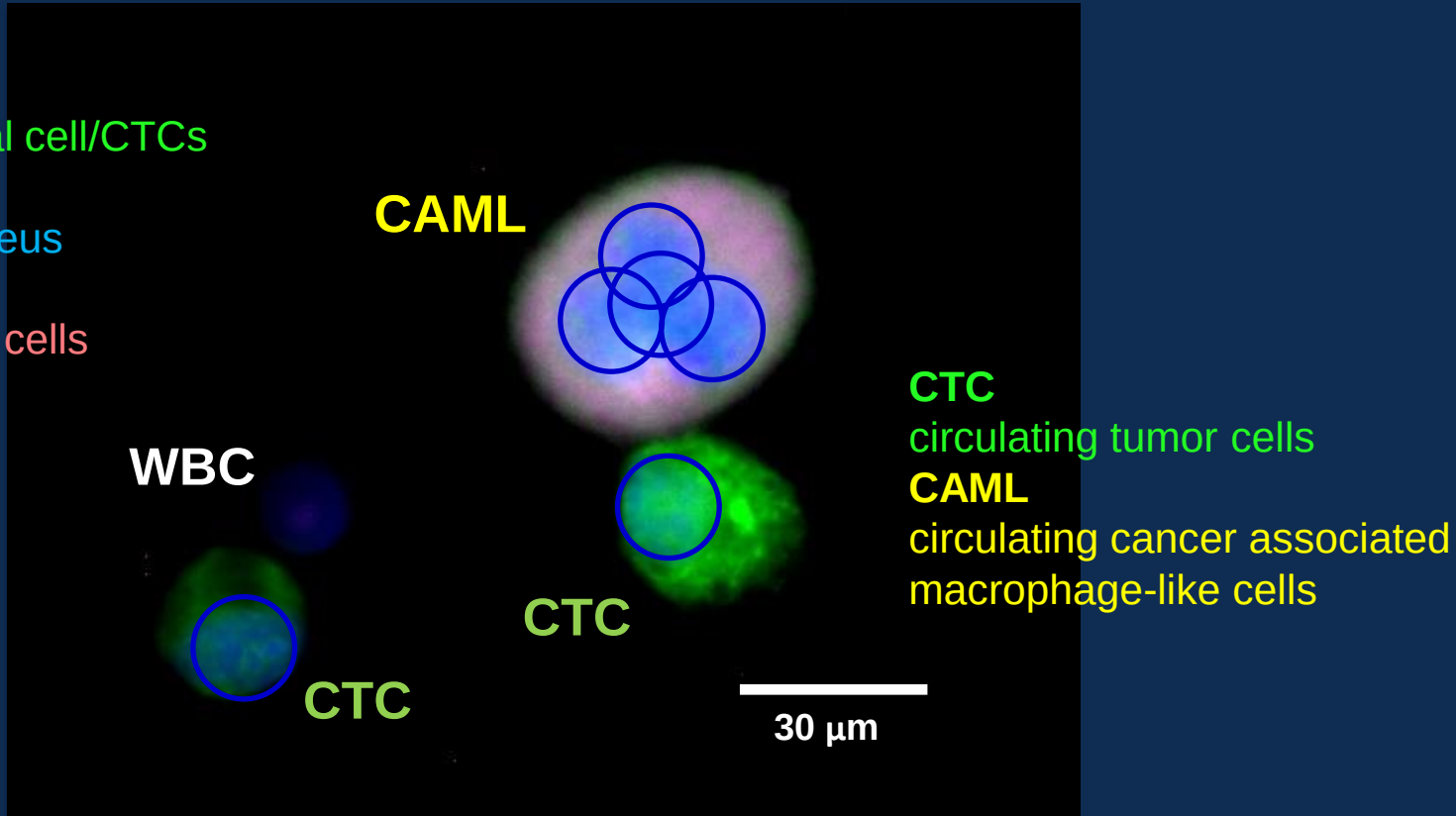
marker for epithelial cell/CTCs

DAPI

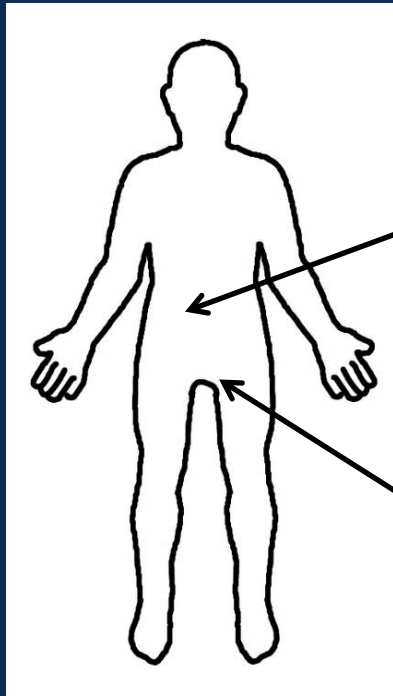
marker for the nucleus

CD14

Marker for myeloid cells



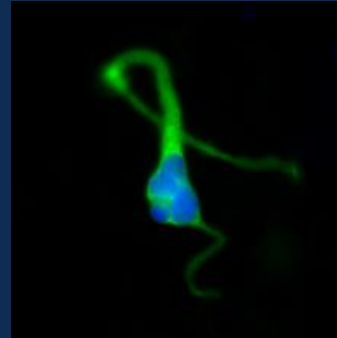
CAMLs contain ingested tumor markers



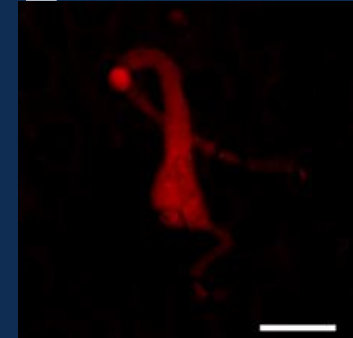
**Pancreas
CAML**

**Prostate
CAML**

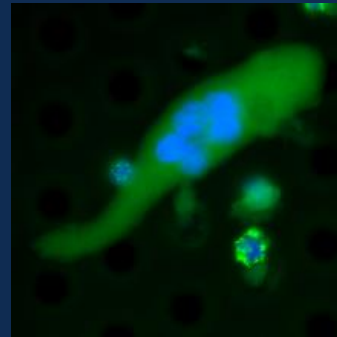
DAPI, CK



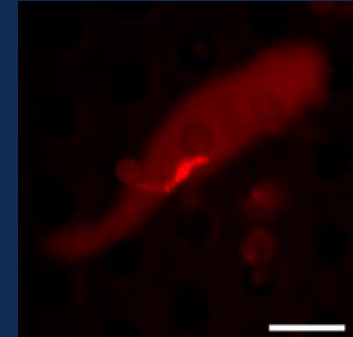
PDX-1



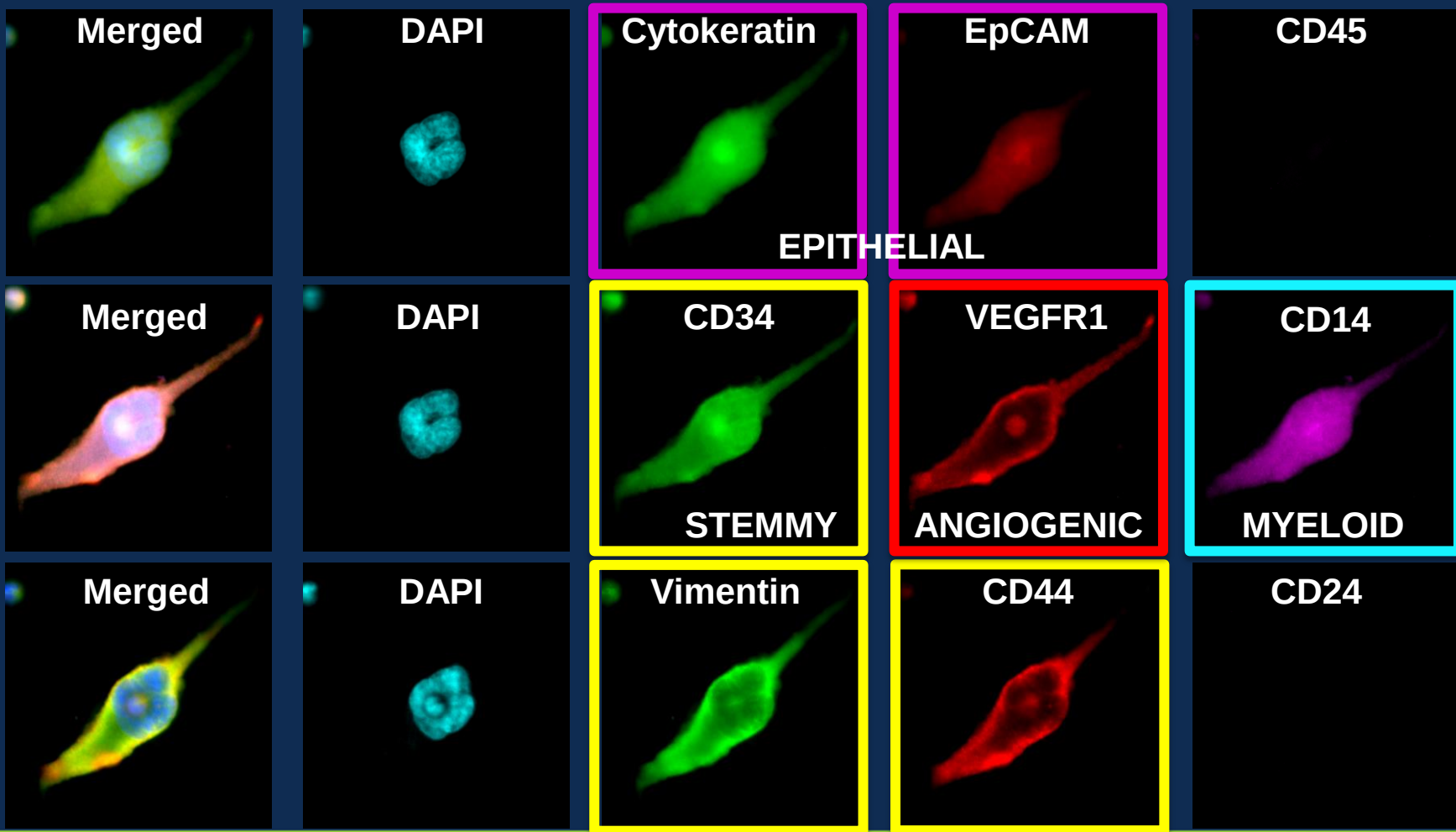
DAPI, CK



PSMA



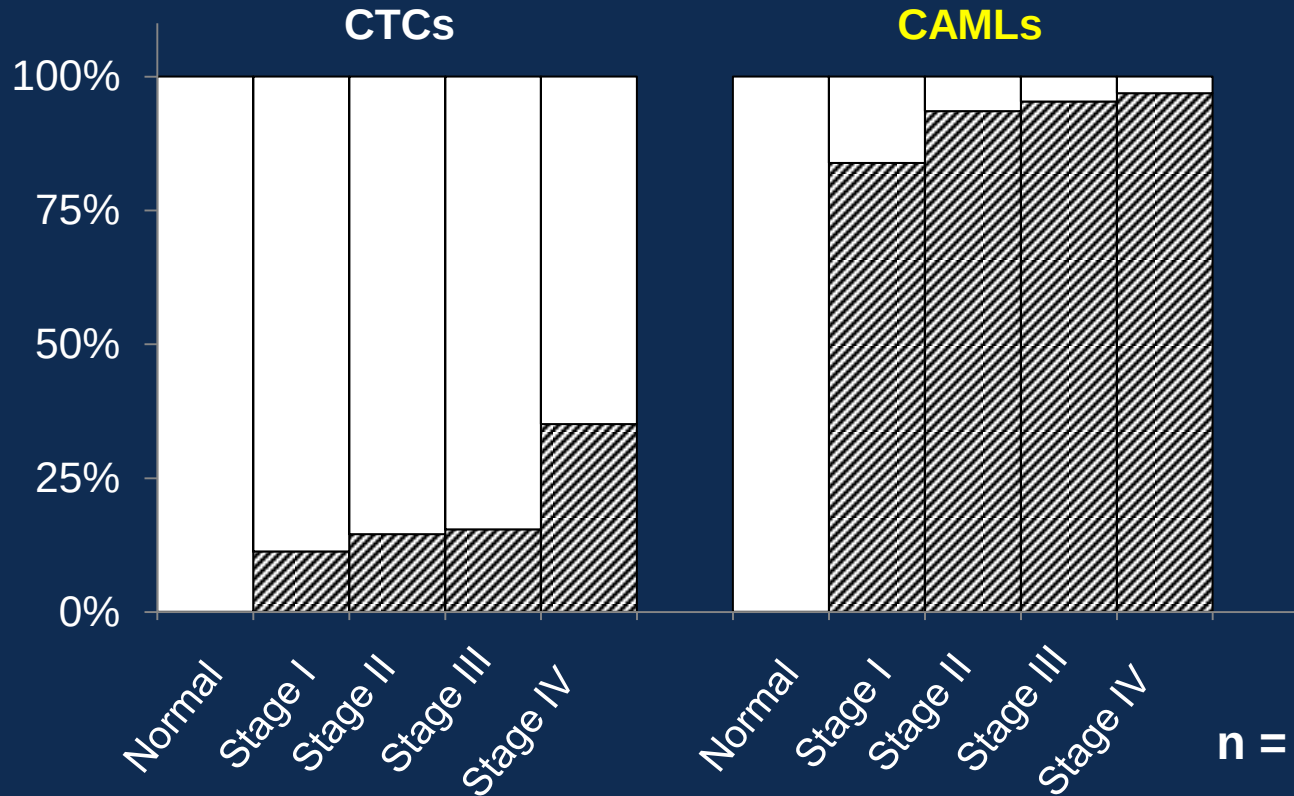
Adams et al. PNAS 2014



Single blind follow up study

- ❖ Multi-institutional prospective 2-year study
- ❖ 293 cancer patient samples
 - Under treatment (n=123) and Untreated/baseline (n=170).
- ❖ 6 types of solid tumors
 - Breast (n=59)
 - Esophageal (n=27)
 - Prostate (n=52)
 - Pancreatic (n=59)
 - Lung (n=59)
 - Renal cell (n=37)

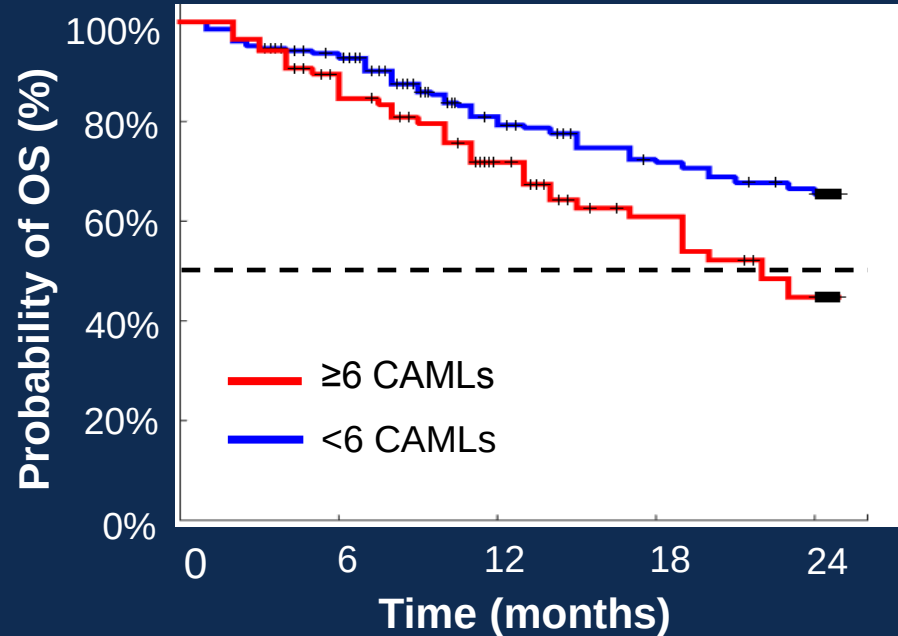
CAMLs found in most patients independent of stage



n = 293 patients

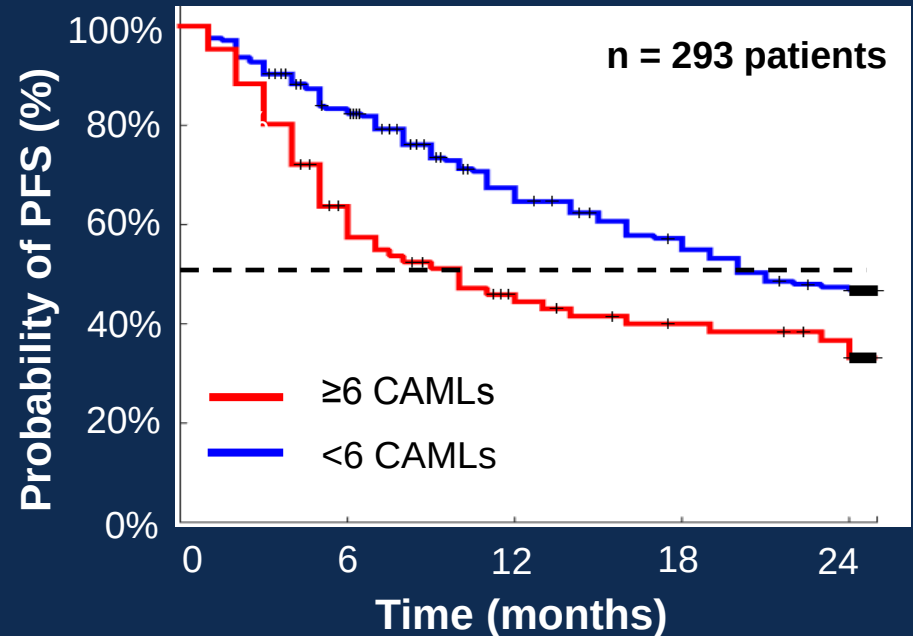
The number of CAMLs is clinically prognostic

OS based on number of CAMLs



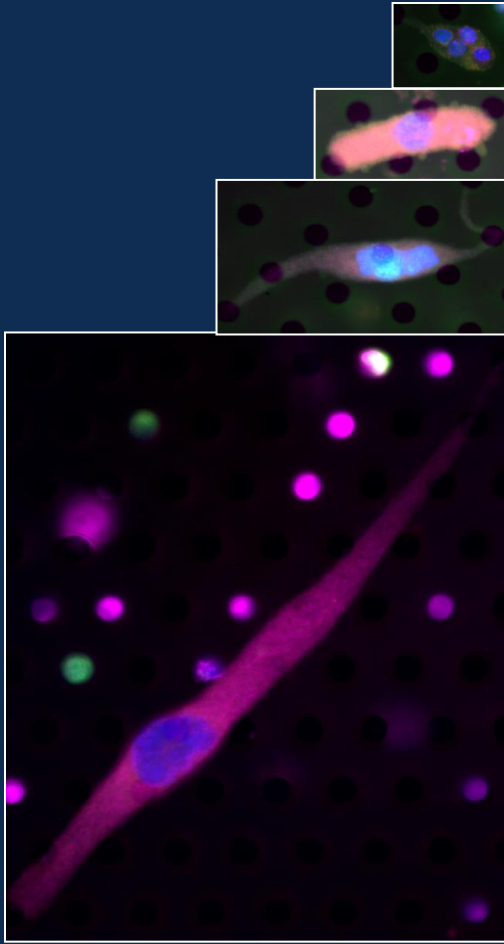
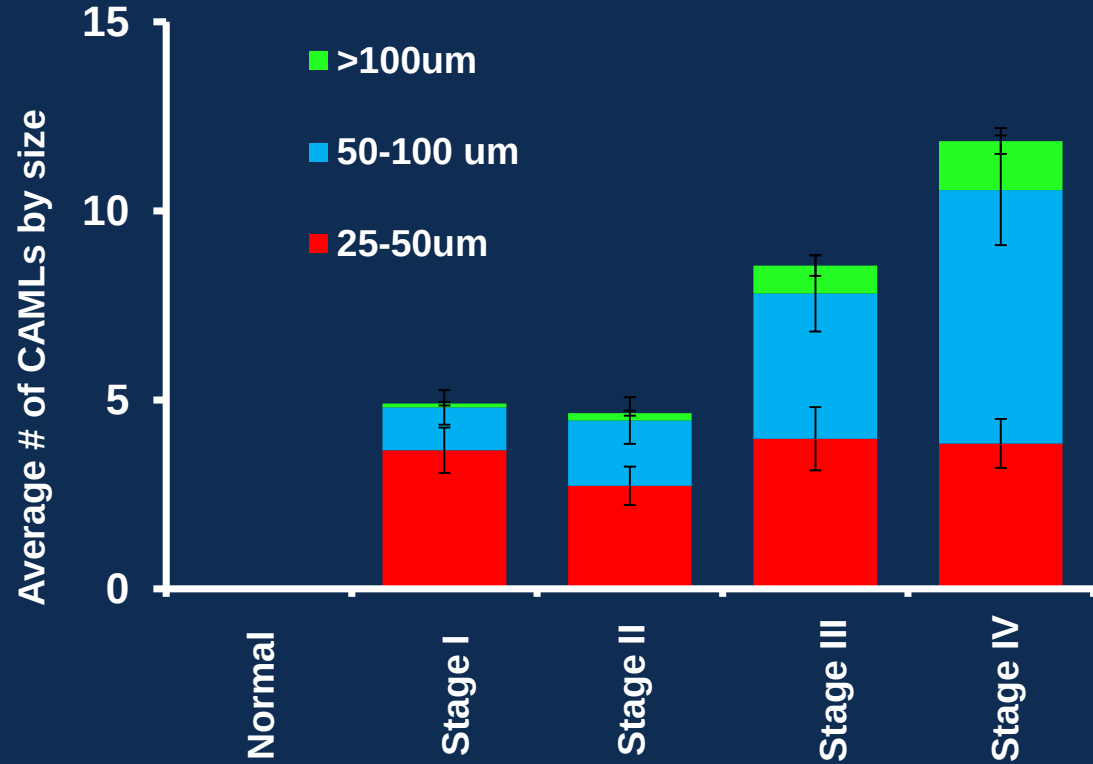
Hazard ratio: 1.9 (95%CI=1.2-3.0, p=0.006)

PFS based on number of CAMLs



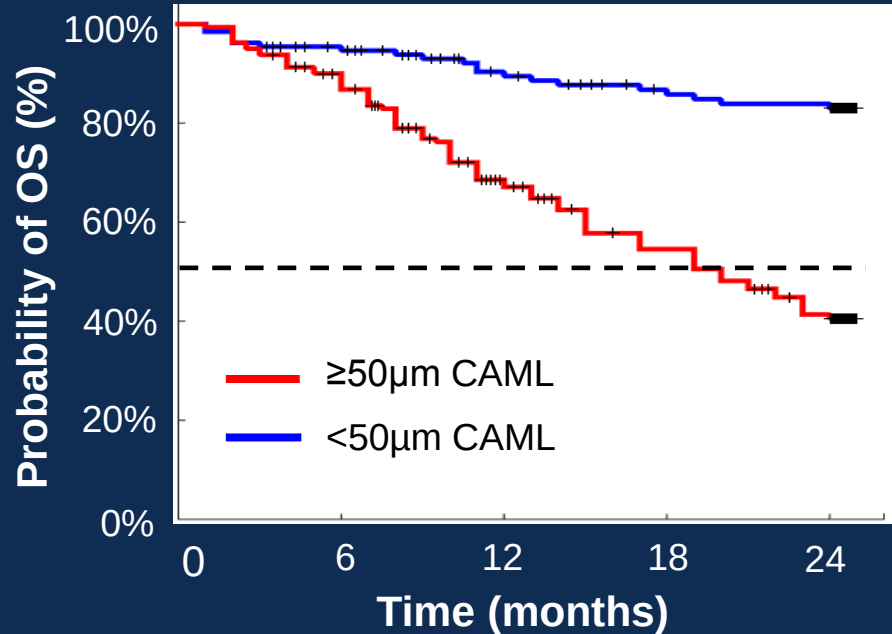
Hazard ratio: 1.8 (95%CI=1.2-2.7, p=0.003)

CAML number and size



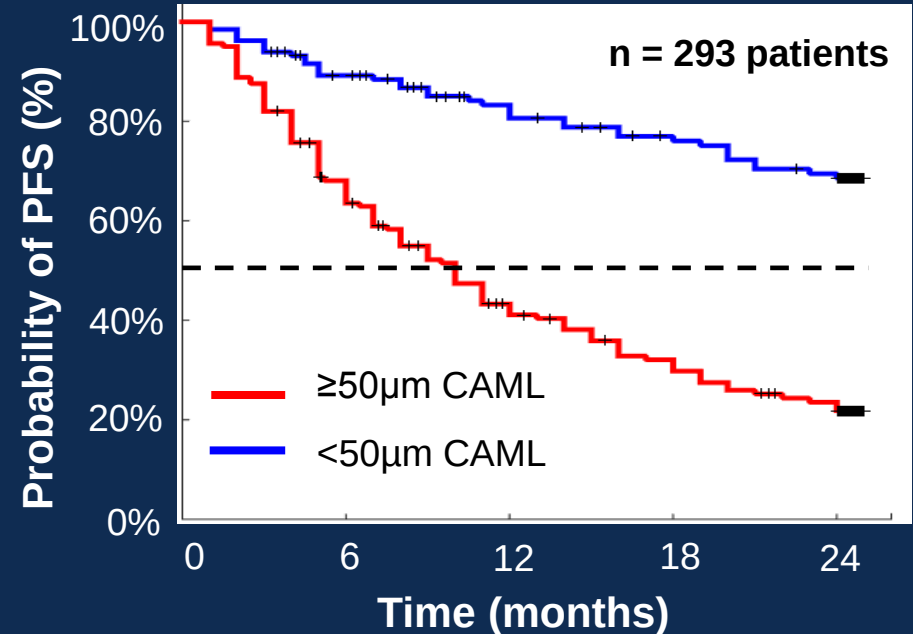
The max size of CAMLs is clinically prognostic

OS based on CAML size



Hazard ratio: 3.6 (95%CI=2.5-5.5, $p<0.0001$)

PFS based on CAML size



Hazard ratio: 3.7 (95%CI=2.7-5.2, $p<0.0001$)

Multivariate analysis

Variable	OS (p value)	PFS (p value)
Stage	0.866	0.751
# CTCs (<5 vs ≥5)	0.995	0.136
# CAMLs (<6 vs ≥6)	0.816	0.244
CAML Size (<50 vs ≥50)	0.015	0.000
Therapy chemo/targeted/none	0.056	0.645
Metastatic pos vs neg	0.678	0.165
Node neg, local, distant	0.017	0.231
Tumor Size (T1, T2, T3 or T4)	0.012	0.485
M/F	0.036	0.796
Age	0.088	0.066
Race (Cau/Bla/Asi/His)	0.152	0.055

Conclusions

- ❖ CAMLs are common in multiple types of solid malignancies at all stages
- ❖ CAML number and size are clinically prognostic for OS and PFS across disease stages
- ❖ In multivariate analysis, CAML size was the most predictive variable for PFS & OS - independent of other clinical variables, including CTCs
- ❖ Additional studies are warranted to determine if CAMLs might also be a predictive blood based marker

Acknowledgements

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The content of the information does not necessarily reflect the position or the policy of the US Government.

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