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UT Health San Antonio Mays Cancer Center
AACR American Association for Cancer Research
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Artificial Intelligence based Tumour Infiltrating Lymphocyte Quantification in Triple Negative Breast Cancer: A Collaborative TIL Validation Study (CATALINA)

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BCRF BREAST CANCER RESEARCH FOUNDATION
TILS BREAST CANCER INTERNATIONAL IMMUNO-ONCOLOGY WORKING GROUP
ECOG-ACRIN cancer research group
UCBG unicancer
ETOP·IBCSG PARTNERS FOUNDATION
Foundation for International Cancer Research

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Disclosure Information

Dr Julia Dixon-Douglas

I have no financial relationships to disclose.

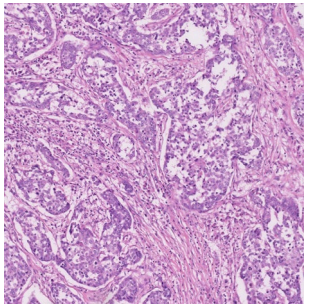
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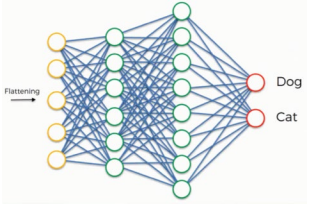
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Background

- TIL are prognostic in early-stage TNBC
- Computational TIL could improve scalability and reproducibility of TIL assessment
- We aimed to assess the prognostic value of cTIL compared to sTIL in a large cohort pooled from multiple prospective clinical trials.







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Methods

Participating trials:
BIG 02-98, EA1199, EA2197, IBCSG22-00, PACS01, PACS04, FinHER

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- Analytical Cohort:
  - 220 breast cancer specimens, previously scored according to TIL-WG guidelines
- Clinical Cohort:
  - WSI and matched clinical data pooled from 7 prospective randomized, phase III clinical trials (N = 1356)
- Two computational models / 5 cTIL scores:
  - AI-TIL, ITLR, percentage_lymphocyte (AI-TIL pipeline)
  - calMeanAnyStroma, calMeanAllStroma (MuTILs pipeline)
- Key Endpoints:
  - Correlation (Spearman's) between cTIL scores and mean pathologist sTIL
  - Prognosis: HR for invasive disease-free, distant-disease free and overall survival (Cox regression)

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Key results

Moderate correlation between cTIL and mean sTIL (rho 0.38-0.47)

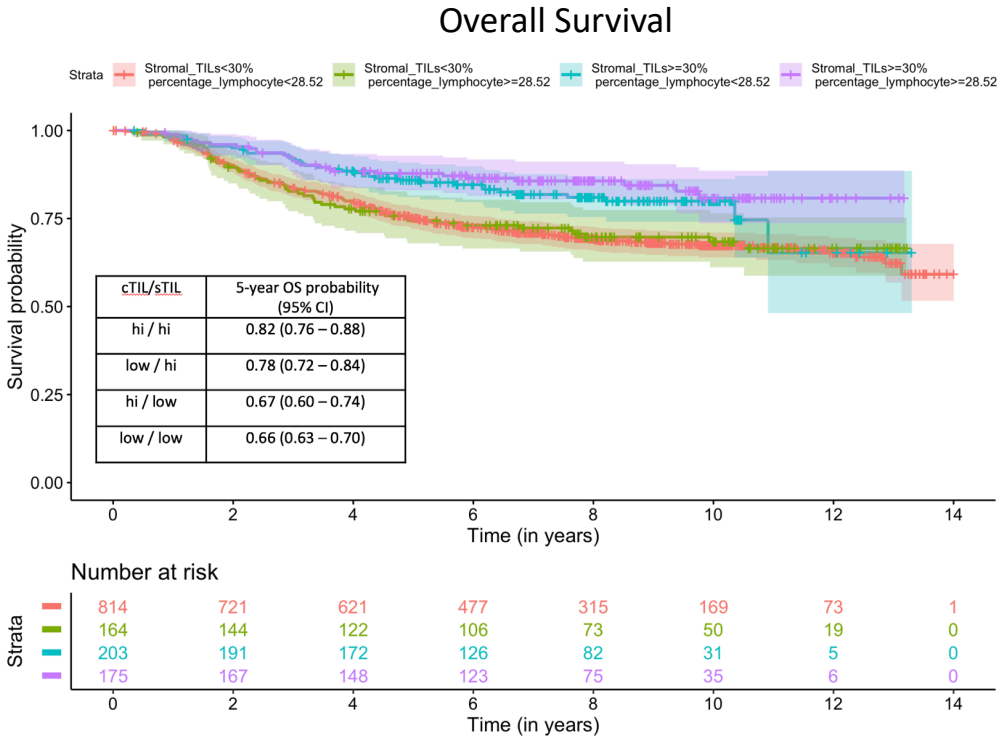
sTIL and all 5 cTIL were prognostic when added to clinical factors alone

- HR 0.70 95% CI 0.61-0.79 (sTIL)
- HR 0.77 95% CI 0.69-0.86 (%lymph)

No cTIL improved prognostication when added to sTIL combined with clinical factors.

sTIL remained highly significant in models adjusted for cTIL

- HR 0.75 95% CI 0.65-0.86 (adj. for %lymph)



For discordant patients, prognosis most closely matches sTIL category.

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Conclusions

- TIL, scored by pathologists or computationally, are prognostic in early-stage TNBC
- cTIL did not provide additional, independent prognostic value to sTIL, expert pathologist scored sTIL remains the clinical benchmark
- The favorable prognostic signal for cTIL is promising; assessment of calibration and clinical utility is required