

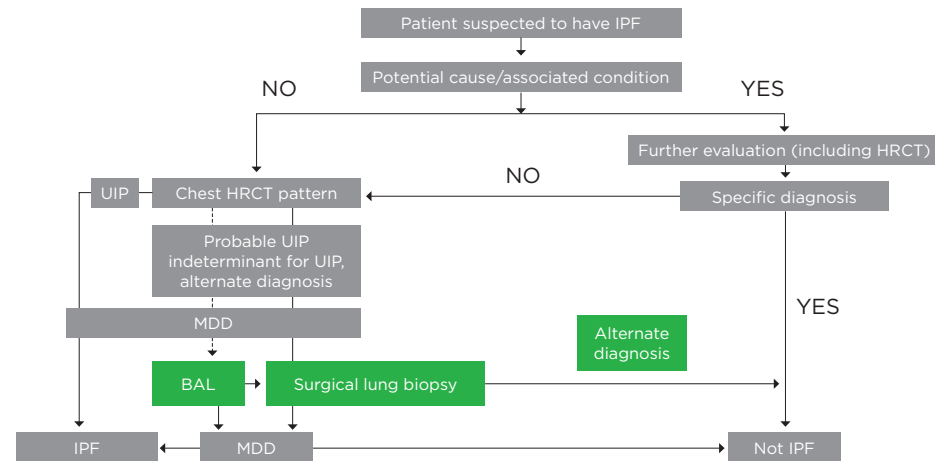
Molecular Diagnosis of Usual Interstitial Pneumonia (UIP) by Envisia Genomic Classifier in Combination with High-Resolution Computed Tomography (HRCT) Improves the Diagnosis of UIP

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BACKGROUND

ATS Guidelines recommend a UIP pattern on HRCT or Histopathology to make a diagnosis of IPF¹



Making a Usual Interstitial Pneumonia (UIP) diagnosis is often challenging

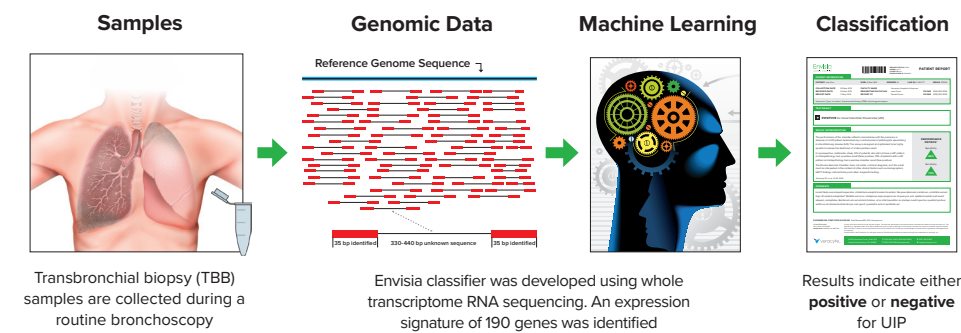
HRCT combined with clinical factors is not always sufficient:

- HRCT misses up to 60% of cases with UIP findings on histopathology^{2,3}

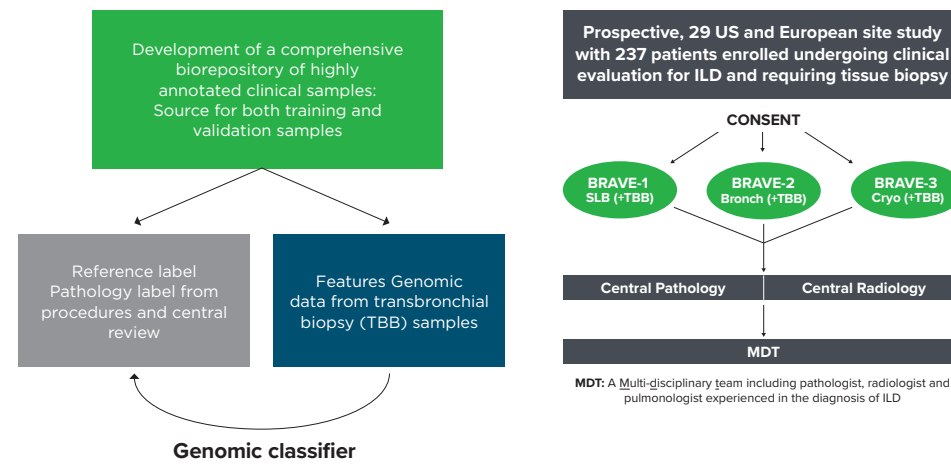
Surgical lung biopsy (SLB) may be required for a more confident diagnosis but carries significant risks

- In-hospital and 90 day mortality 1.7% - 3.9%³
- There may be inter-reader variability in the pathology interpretation for UIP
- SLB is not an option for a subset of patients and some patients are unwilling to undergo SLB

Envisia classifier was developed using RNA Sequencing and machine learning to accurately detect a genomic pattern of UIP without histopathology



BRAVE: The Clinical Studies Supporting Algorithm Development Validation, and Clinical Utility of the Envisia Genomic Classifier⁴



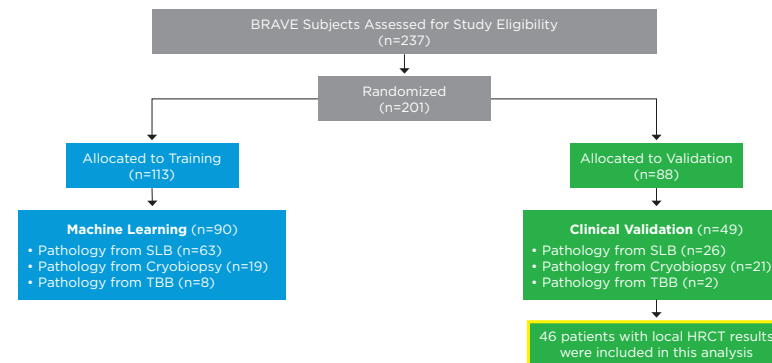
OBJECTIVE OF THIS STUDY

- We assessed the diagnostic accuracy of Envisia classifier combined with HRCT interpreted by local community radiologists to ascertain the diagnosis of UIP.
- We hypothesized that the diagnostic yield of UIP would be greater with the combination of HRCT readings by local radiology and the Envisia Classifier compared to radiology alone.

METHODS

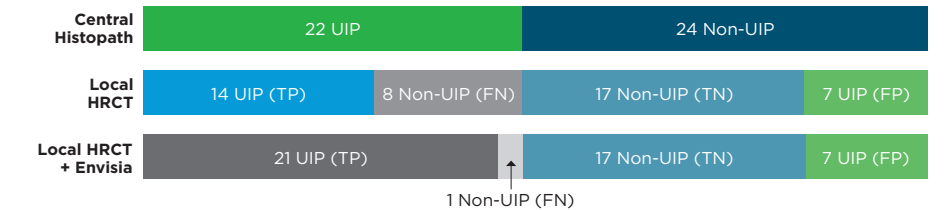
- 46 /49 patients in the validation cohort of the BRAVE study who had an HRCT scan read by local radiology were included in this analysis.
- All HRCT images and histopathology were evaluated by a local radiologist and pathologist, respectively and by central expert chest radiologist and pathologists.
- Cases interpreted as UIP either by local radiologist or by Envisia classifier were compared to central review of biopsy proven UIP.
- Clinical data with HRCT findings were compared by two multidisciplinary teams using either Envisia Genomic Classifier results versus histopathology to determine an IPF or non IPF diagnosis.

Inclusion of BRAVE Study Participants⁴

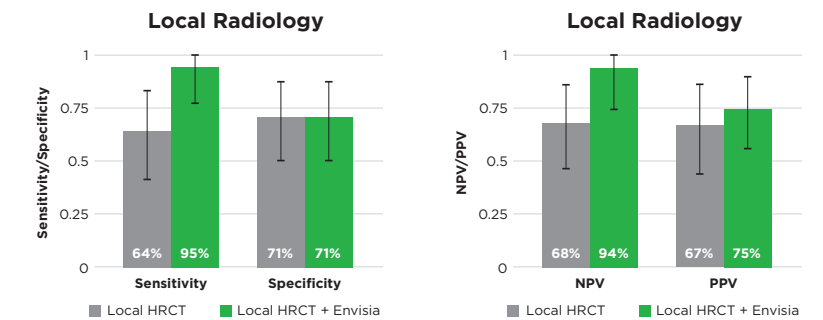


RESULTS

Combining Envisia Classifier with Local HRCT improved diagnostic yield of UIP when compared to local radiology alone



The addition of the Envisia Classifier to HRCT detects UIP with improved sensitivity and NPV compared to Radiology alone



Diagnostic agreement between MDD with Envisia (MDD 2) and MDD with histopathology (MDD 1) in patients with Local HRCT non-UIP

Patients	Local HRCT	Local Pathology	Central HRCT	Central Pathology	Envisia Classifier	MDD 1	MDD 2
1	HP vs sarcoidosis	UIP	HP	UIP	UIP	Non IPF	Non IPF
2	UIP vs NSIP vs BOOP	OP	HP	UIP	UIP	Non IPF	Non IPF
3	Acute pneumonitis	UIP vs HP	NSIP	UIP	UIP	IPF	IPF
4	HP	HP	Asbestosis	UIP	UIP	Non IPF	Non IPF
5	NSIP	Chronic bronchial inflammation	UIP	UIP	UIP	IPF	IPF
6	NSIP vs HP	Unclassifiable ILD	UIP	UIP	UIP	IPF	IPF
7	Chronic interstitial fibrosis	UIP	HP	UIP	UIP	Non IPF	IPF

CONCLUSIONS

- Combining Envisia Classifier with Local HRCT improved diagnostic yield of UIP when compared to local radiology alone.
- The addition of the Envisia Classifier to Local HRCT detects UIP with improved sensitivity and NPV compared to local radiology alone.
- The Envisia Classifier may be beneficial in facilitating an accurate and timely identification of UIP and avoiding the need for SLB in patients reviewed by MDT with suspected IPF.

REFERENCES

1. Raghu G, et al. Am J Respir Crit Care Med. 2018 Sep 1;198(5):e44-e68. 2. Chung J, et al. Chest 2015;147(2):450-459. 3. Hutchinson L, et al. Am J Respir Crit Care Med 2016; 193:1161-67. 4. Raghu G, et al. Lancet Respir Med. 2019 Jun;7(6):487-496.