




## Letter to the Editor

# Response to: Letter to the Editor Regarding CT-based Prediction of Lung Cancer Histology

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## DEAR EDITOR,

We sincerely thank the author for the thoughtful comments and for highlighting emerging imaging approaches regarding our recently published article entitled “CT-defined Emphysema Morphology as a Predictor for Histological Subtypes of Lung Cancer: A Single-center Retrospective Study.” We greatly appreciate the opportunity to further discuss the evolving role of imaging in the noninvasive characterization of lung cancer.

We fully agree with the author that advanced imaging techniques, such as micro-computed tomography (micro-CT), play an important role in bridging imaging and histopathology. Recent developments have demonstrated that micro-CT can provide nondestructive three-dimensional “X-ray histology” with micrometer-scale resolution, offering detailed microarchitecture which further can predict histological characteristic of lung disease.<sup>1</sup> In this regard, both approaches—micro-CT and clinical CT-based analysis—share an overarching goal: to enhance imaging’s ability to reflect underlying tumor biology and to potentially reduce reliance on invasive diagnostic procedures.

Although micro-CT is primarily applied in *ex vivo* settings under controlled experimental conditions, our study focused on routinely available clinical CT imaging to identify radiologic phenotypes associated with histological subtypes of lung cancer. From a practical clinical perspective, such approaches may offer immediate applicability, particularly in situations where tissue sampling is limited, contraindicated, or technically challenging.<sup>2</sup>

Within this broader framework, CT-based imaging biomarkers—such as emphysema morphology evaluated in our study—represent a complementary strategy in the continuum of imaging research. Increasingly, quantitative imaging approaches, including radiologic phenotyping and radiomics-based analyses, are being explored to further strengthen the link between imaging features and tumor biology.<sup>3-5</sup> Future integration of high-resolution experimental imaging, quantitative imaging analysis, and radiologic–pathologic correlation may provide a more comprehensive understanding of lung cancer heterogeneity.

We thank the author for contributing to this important discussion and for emphasizing the potential of advanced imaging technologies to advance noninvasive diagnostic strategies.

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**Footnotes****Authorship Contributions**

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