

PARTNER SEARCH FORM

Your contact details

Organisation	<i>Bar Ilan University</i>
Contact person	<i>Amir Bashan</i>
Department (if needed)	<i>Physics</i>
Phone	<i>+972 54-468-9355</i>
e-mail	<i>Amir.bashan@gmail.com</i>

Your organisation

Describe your Organisation	<i>Research</i>
Type of organisation	<i>University</i>
List up to 5 keywords describing your sector or specialisation:	<i>Data science, human microbiome, network science, machine learning</i>

Your experience

Have you already participated in an EU funded project?	<i>Yes</i>
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Your offered expertise and contribution

HEU call topic(s) of relevance	<i>HORIZON-MISS-2026-02-CANCER-02: Microbiome for early cancer prediction before the onset of disease</i>
Your offered contribution	<p>We can contribute unique expertise in microbiome network science, individualized microbiome analysis, and AI-driven predictive modeling for early cancer detection. Our work has uncovered fundamental principles governing microbial community dynamics, including universal interaction structures across individuals, complexity–stability trade-offs, and top-down identification of keystone taxa within microbial ecosystems. Building on these foundations, we developed innovative single-sample methodologies such as IDOA and individualized network analysis, enabling the characterization of microbial ecological states and dysbiosis from a single microbiome sample, an essential capability for clinically deployable diagnostics. In addition, our model-free machine learning frameworks, including kNN-based predictive approaches, provide scalable and interpretable tools for personalized risk assessment and prediction of microbiome responses to perturbations. Within the proposed call, these approaches could support the development of AI-assisted microbiome biomarkers for early cancer prediction, longitudinal monitoring of dysbiosis trajectories preceding disease onset, and personalized risk modeling integrating microbiome composition, ecological network structure, and clinical metadata across large patient cohorts.</p>
Your offered role	Work Package leader or partner