



Session	Start-ups/SMEs looking for Finance: Pre-seed/Angel/Seed
Title	InvitroLinker: An AI-Optimized, Precision-Fermented Protein Additive for Swine Sperm and Embryo Cryopreservation
Company	BioLinker
Speaker	Mona Oliveira
TRL	TRL 8 - 9
Keywords feedstock (max 2)	Cultivate media
Keywords technology (max 2)	Fermentation AI
Keywords End-Product (max 2)	Protein
Abstract:	
Efficiency in artificial insemination is a persistent challenge for swine agriculture, with sperm dose losses estimated at 30-50% in Brazilian agribusiness, representing US\$360-600 million in annual direct losses. Sperm conservation remains the greatest bottleneck limiting reproductive throughput in commercial herds. Here we present InvitroLinker, a swine-specific proteic cryopreservative developed by BioLinker Synthetic Biology through a biomimetic, precision-fermentation approach optimized by artificial intelligence (bAlo) for high-yield, consistent production. The bio-additive was designed to enhance reproductive parameters in sows by improving sperm membrane stability during freezing and thawing. In collaboration with academic partners, boar semen samples were cryopreserved with increasing concentrations of the additive (0, 50, 100, and 150 ng) and evaluated by flow cytometry, computer-assisted sperm analysis (CASA), and ATP dosage. Total motility (TMOT) increased significantly across all treated groups compared to control (0 ng: 28.58%; 50 ng: 46.50%, $p=0.0007$; 100 ng: 42.90%, $p=0.0011$; 150 ng: 48.48%, $p=0.0006$), corresponding to increases of up to 70% in key sperm quality parameters. These results position InvitroLinker as a nationally produced, cost-effective, and patent-protected alternative to imported cryopreservation media, with applications extending to embryo conservation.	