Search for a Spanish Partner for a Bilateral R&D Project (this document will be shared with potential Spanish companies)

Organization	
Date of Request:	20/09/2026
Company name:	Sinai University
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SECTION 1: Your Company Profile *(Please give brief / to the point explanations. For more explanation on any point below, you may add a short paragraph as an annexure, with this document.)*	
Business Sector	Education and research
Company mission or core functions	To deliver high-quality pharmaceutical education and to conduct innovative drug-delivery and nanotechnology research that contributes to the development of the Sinai region and beyond. The Faculty of Pharmacy is committed to preparing qualified pharmacists, advancing pharmaceutical technology, and supporting community pharmaceutical-care needs.
Date of establishment	2006 — Sinai University was established by Presidential Decree No. 363 of 2005 (operating under Law No. 101 of 1992, replaced by Law No. 12 of 2009 on Private and National Universities); the Faculty of Pharmacy commenced teaching in 2006.
Ownership (if public and traded, add stock exchange and ticker symbol)	Private, non-profit Egyptian university — governed by Law No. 12 of 2009 and its executive regulations (Presidential Decree No. 302 of 2010). Not publicly traded; no stock-exchange listing.
Total number of employees	1200
Number of employees in R&D	50

Key products sold or services provided	Education
Company core technical competences	Green synthesis and standardization of selenium nanoparticles (SeNPs) using natural matrices (honey and royal jelly); advanced drug-delivery systems (transdermal, buccal, topical, and inhalation) including hydrogels, nanofibres and bioadhesive platforms; lipid and polymeric nanocarriers (SLNs, NLCs, nanovesicles, hybrid nanocarriers); physicochemical characterization (DLS, zeta potential, TEM, SEM, FTIR, XRD); in vitro and in vivo preclinical evaluation (biocompatibility, wound-healing models, pharmacodynamics, toxicology).
Key R&D programs and activities	Drug delivery
Examples of accomplishments	- NAQAAE accreditation of the Faculty of Pharmacy (Kantara Branch). - ISO 9001:2015 certification of the University Quality Management System (TÜV NORD Egypt). - Several hundred peer-reviewed publications in high-impact international journals across pharmaceutics, pharmacology, biochemistry, materials science and nanotechnology (see SU Research Publications). - Establishment of the Center for Scientific Research and Sustainable Development (~15 staff) supporting joint research clusters and technology transfer. - Multiple funded research projects, patents filed, and memoranda of understanding with Egyptian, Arab and international universities. - Awarding of more than 70,000 scholarships to undergraduate students (cumulative since 2006).
Company strategic orientation	To become a leading Egyptian, regional and international university recognized for excellence in pharmaceutical education and translational drug-delivery research, with a strategic focus on green nanotechnology, sustainable bio-materials, and industry–academia technology transfer — including joint R&D and bilateral projects with European (notably Spanish) partners under CDTI-equivalent frameworks.

SECTION 2: Partner of Interest *(Please provide a brief summary of the prospective partner company or organization. This summary may address some or all of the points below)*	
Profile of ideal technology partner	Pharmaceutical caompany
Core technological competencies and expertise	Topical products
Other essential qualifications (e.g.: ownership, track records etc.)	Experience with EU GMP and EMA regulatory frameworks for topical and transdermal pharmaceutical products (or medical devices classified under MDR 2017/745); an established Quality Management System (ISO 9001 / ISO 13485); a demonstrable track record of taking laboratory formulations through pilot-scale batches to commercial production; capability to host or sponsor ICH-compliant (ICH Q1A) accelerated and real-time stability studies; experience with regulatory dossier preparation for the Egyptian Drug Authority (EDA) and EMA.
If you have a list of companies with whom you are in contact or interested in contacting, please provide contact details	No shortlist yet finalized — partner introductions currently being coordinated through CDTI (Spain) and the EDA (Egypt). Active interest in Spanish companies operating in: (a) topical dermatological formulations and cosmeceuticals, (b) wound-care dressings, hydrogels and bioactive matrices, (c) industrial-scale green synthesis of metallic nanoparticles, and (d) GMP contract development and manufacturing (CDMO).
If you are interested in collaboration: please specify details and other important information you want to share with a potential company	We are seeking a company that can offer: • Final Drug Delivery Vehicle: Incorporating the aqueous honey–royal jelly SeNP colloid into a commercially viable topical vehicle (e.g., thermosensitive hydrogel, alginate sheet, or bioadhesive spray). • Batch Reproducibility & Scale-Up: Translating the synthesis from

	benchtop (milliliters) to pilot batch reactors (liters), establishing critical quality attributes (CQAs) and in-process controls (IPCs). • Stability Studies: Accelerated and real-time physical/chemical stability testing compliant with International Council for Harmonisation (ICH) standards. • Techno-Economic & Regulatory Dossier: Preparing preliminary documentation for European Medicines Agency (EMA) / Medical Devices Regulation (MDR 2017/745) classification in Spain and Egyptian Drug Authority (EDA) registration pathways.
Interested areas of collaboration	For a pharmaceutical or biotech industrial partner, the technical collaboration is structured across four primary development areas: • Area 1: Raw Material Standardization & Nanomaterial Synthesis (Academic-Led)Standardization of bee-derived raw matrices (honey and royal jelly) based on active marker compounds (phenolics, flavonoids, royalactin, 10-HDA). Optimization of the green synthesis reaction kinetics: precursor-to-extract ratios, pH, temperature, and yield efficiency. Advanced physicochemical profiling: Dynamic Light Scattering (DLS), Zeta potential, Transmission Electron Microscopy (TEM), and FTIR surface corona verification. • Area 2: Pharmaceutical Formulation & Drug Delivery (Industry-Led)Formulation of the aqueous SeNP colloid into a stable, commercially viable topical dosage form:Thermosensitive or bioadhesive hydrogels (e.g.,

	pluronic, alginate, hyaluronic acid, or carbomer bases).Impregnated bioactive dressings, sprays, or electrospun nanofiber meshes.Evaluation of pharmaceutical attributes: rheology, syringeability/spreadability, bioadhesion, and controlled release kinetics of elemental selenium and bioactives. • Area 3: Preclinical Efficacy & Mechanistic Validation (Academic-Led)In Vitro Biological Dossier: Biocompatibility testing on human dermal fibroblasts (HDF) and epidermal keratinocytes (HaCaT); scratch assay migration kinetics; ROS scavenging capacity; and macrophage polarization assays (M1 to M2 phenotype shift). Antimicrobial & Biofilm Testing: Determination of Minimum Inhibitory Concentrations (MIC) and eradication of wound-associated resistant pathogens (e.g., S. aureus, P. aeruginosa). In Vivo Diabetic Wound Models: Preclinical excisional wound validation in diabetic mice/rats to assess wound closure rates, histological re-epithelialization, collagen deposition, and angiogenic markers (VEGF, CD31). • Area 4: Pilot Scale-Up, Stability & Quality Assurance (Industry-Led)Translation of benchtop reaction parameters (milliliters) into pilot-scale batch production (liters).Definition of Critical Quality Attributes (CQAs) and In-Process Controls (IPCs).Accelerated and real-time physical/chemical stability testing following ICH guidelines (ICH Q1A) to assess shelf-life, colloidal aggregation, and active ingredient degradation.

Specific R&D contribution you are seeking/offering	We are offring: • Nanomaterial Standardization: Standardizing the green synthesis parameters (precursor ratio, temperature, reaction pH, and matrix capping efficiency). • Advanced Characterization: Nanoparticle sizing, hydrodynamic distribution, polydispersity index (PDI), surface charge (zeta potential), morphology (TEM), and chemical capping profiles (FTIR). • In Vitro Biological Dossier: Biocompatibility profiling on human dermal fibroblasts and epidermal keratinocytes; scratch-wound closure kinetics; ROS quenching assays; macrophage polarization (M1 to M2 transition); and antimicrobial minimum inhibitory concentration (MIC) assays against wound-associated pathogens (e.g., Staphylococcus aureus, Pseudomonas aeruginosa). • In Vivo Preclinical Validation: Diabetic excisional wound mouse models assessing percentage wound contraction, time to complete re-epithelialization, microvascular density, collagen deposition, and inflammatory biomarker expression.

Ossama Sayed

Signature
Name: Ossama M Sayed
Date: 20/09/2026

Project Summary: Green Synthesis of Honey–Royal Jelly-Mediated Selenium Nanoparticles for Mechanism-Guided Therapy of Diabetic Wound Healing

Investigators: Prof. Ossama M Sayed, Amr Mahmoud — Faculty of Pharmacy, Sinai University (Kantara Branch)

The Problem

Diabetic foot ulcers and chronic diabetic wounds remain a stubborn clinical challenge because the diabetic wound microenvironment is simultaneously hit by four reinforcing pathologies: persistent oxidative stress, chronic inflammation, microbial colonization/biofilm, and impaired re-epithelialization/angiogenesis. Conventional care — debridement, dressings, glycemic control, antibiotics, single-target growth-factor therapies — addresses these factors in isolation and therefore produces incomplete closure. Meanwhile, inorganic selenium has a narrow therapeutic window, and most chemically synthesized selenium nanoparticles (SeNPs) rely on toxic reagents, energy-intensive processing, and non-biocompatible stabilizers that limit clinical translation.

The Idea

Use a combined honey–royal jelly aqueous extract as a single, all-in-one green "reaction medium" to reduce, cap, and bio-functionalize selenium ions into SeNPs. Honey contributes reducing sugars, phenolics, flavonoids, organic acids and osmotic antimicrobial activity; royal jelly contributes proteins, peptides, 10-HDA, royalactin and lipids known to modulate keratinocyte migration, nitric-oxide output, and TGF-β signaling. The result is a nanoparticle whose elemental Se core is wrapped in a bioactive corona of bee-derived molecules — i.e., the synthesis route is itself a therapeutic feature, not just a manufacturing choice.