

SANJAY K. GUPTA, Ph.D.

Scientific & Technical Advisor

Agricultural Biotechnology | Biologicals | Crop R&D; | Enzymes, Proteins & Bioassays

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PROFESSIONAL PROFILE

Scientist and independent advisor with more than 20 years of experience in agricultural biotechnology, crop physiology, industrial R&D;, academic research, patent examination, and competitive-program review. I help clients determine what scientific evidence supports, identify unresolved technical risk, and prioritize the next work needed for a sound investment, partnership, validation, or development decision.

AREAS OF EXPERTISE

Agricultural & Crop Technologies

- Agricultural biologicals and crop inputs
- Nitrogen-use-efficiency technologies
- Plant-microbe interactions and mode-of-action evidence
- Controlled-environment, greenhouse, and field validation
- Greenhouse-to-field translation
- Potato storage, processing quality, and biochemical markers

Biochemical, Assay & R&D; Platforms

- Enzyme kinetics and functional characterization
- Recombinant protein expression and purification
- HPLC, FPLC, ELISA, and biochemical assays
- Endpoint, continuous, coupled, and 96-well assays
- Experimental design, data interpretation, and scientific review
- R&D; pipelines, teams, infrastructure, and CRO assessment

QUESTIONS I HELP CLIENTS ADDRESS

- Does the available evidence support the claimed efficacy, mechanism, or development potential?
- Can controlled-environment results reasonably translate into repeatable field performance?
- Are the experimental design, controls, assays, and validation plan adequate for the decision being considered?
- What additional work would reduce the most technical risk?
- Does the R&D; team have the people, facilities, outside partners, and decision processes needed to execute?

SELECTED CREDENTIALS & EXPERIENCE

Agricultural biologicals and product validation: Developed and evaluated agricultural biological product candidates in an industrial setting; established controlled-environment studies, coordinated external field trials, interpreted performance variability, and supported cross-functional development decisions.

Scientific team and research operations: Recruited and trained technical staff and improved SOP-based workflows, laboratory safety, scientific documentation, and coordination with external research partners.

Enzymes, proteins, and assays: Hands-on experience in enzyme kinetics, recombinant protein expression and purification, HPLC/FPLC, ELISA, biochemical assays, method development, troubleshooting, and quantitative data interpretation.

Crop physiology and commercialization: Research experience across potato and major field crops. Contributed scientific research supporting the advancement of four potato varieties toward commercialization and developed biochemical-marker approaches for storage and processing traits.

Independent scientific review: Experience reviewing manuscripts, datasets, research plans, experimental designs, technical presentations, and multidisciplinary projects.

Competitive-program review leadership: Served as an external, non-federal reviewer and review panel chair for competitive USDA Agricultural Marketing Service programs.

Patent and intellectual-property perspective: Former USPTO Biotechnology Patent Examiner with experience evaluating scientific disclosures, prior art, claim scope, enablement, and technical distinctions. Input is scientific and technical, not legal advice.

SUITABLE ENGAGEMENTS

Expert consultations Focused 30-90 minute calls or technical interviews.	Scientific review Review of data packages, research plans, manuscripts, or presentations.
Technical due diligence Independent assessment of claims, evidence quality, development stage, risks, and next milestones.	R&D; advisory projects Defined support for assay strategy, validation planning, pipeline priorities, or scientific operations.
Portfolio-company support Short-term or fractional help with technical assessment, team development, or product validation.	Panels and workshops Scientific review panels, advisory boards, technical workshops, and structured decision sessions.

ENGAGEMENT PRINCIPLES

Available for consultations and defined scientific or technical advisory projects, including review of client-confidential materials under an appropriate NDA. Scope, deliverables, timeline, and fees are agreed in writing before work begins. All work is subject to applicable confidentiality, contractual, and conflict-of-interest obligations. Services provide independent scientific, technical, and operational analysis and do not constitute legal, tax, securities, or regulated investment advice.