

Dr. Girish Sahni

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Specialization: Protein Engineering, Molecular Biology, Biotechnology
Education: Panjab Univ., Chandigarh: B.Sc. Hons. 1976; M.Sc. Hons 1978;
Ph. D. (I.I.Sc.) Bangalore 1984.

Post-Ph.D. Career: Univ. of California, Santa Barbara, CA, USA: Postdoc Trainee 1984-86; Rockefeller Univ. New York, USA: Sr. Res. Assc. and Adjunct Faculty '86-'88; Albert Einstein Coll. Medicine, New York: Sr. Res. Assc. 1987-91; CSIR-Instt. of Microbial Tech : Senior Scientist 1991-2005; Director: 2005-2015; Director General, CSIR 2015-present.

Scientific Work: Contributions in the area of protein cardiovascular drugs especially 'clot busters' and their mode of action in the human body. Lead teams responsible for producing technology for India's first indigenous clot bluster drug, natural streptokinase (under brand name 'STPase' marketed by Cadila Pharmaceuticals Ltd., Ahmedabad), and recombinant streptokinase (produced by Shasun Drugs, Chennai) marketed as several brand names eg. 'Klotbuster' (Alembic) and 'LupiFlo' (Lupin). Developed a novel life-saver thrombolytic drug (Clot-specific streptokinase) India's first bio therapeutic molecule which is not a Biosimilar that has been patented world wide, and licensed to a US Pharma company in 2006. Commercial launch expected 2016. Recently, developed Fourth-generation 'Anti-thrombotic' clot busters that have been out-licensed in multi-million dollar deals.

Important publications: (1) Multiple exosites distributed across the three domains of streptokinase co-operate to generate high catalytic rates in the streptokinase-plasmin activator complex. *Biochemistry* (2013 in Press) (2) First Structural Model of Full-Length Human Tissue-Plasminogen Activator: A Saxs Data-Based Modeling study. *J. Phys. Chem. B* (2012) 116(1):496-502. (3) Substrate kringle-mediated catalysis by the streptokinase-plasmin activator complex: Critical contribution of kringle-4 revealed by the mutagenesis approaches. *Biochem Biophys Acta-Proteins and Prteomics* (2012) 1824: 326-333 (4) Identification through combinatorial random and rational mutagenesis of a substrate-interacting exosite in the gamma domain of Streptokinase. *J Biol. Chem.* (2011)286, 6458,6469. (5) Molecular cloning, expression, purification and characterization of truncated forms of human plasminogen in *Pichia pastoris* expression system (2010) *Process Biochemistry* 45, 1251-1260. (6) Probing the primary structural determinants of Streptokinase inter-domain linkers by site-specific substitution and deletion mutagenesis. *BBA Proteins and Proteomics* (2010) 1804, 1730-1737. (7) Identification of a new exosite involved in catalytic turnover by the Streptokinase-Plasmin activator complex during human plasminogen activation (2009) *J Biol. Chem.* 284, 32642-32650. (8) Enhanced production of recombinant streptokinase in *Escherichia coli* using fed-batch culture (2009) *Bioresource Technol.* 100:4468-74 (9) Role of the 88-97 loop in plasminogen activation by streptokinase probed through site-specific mutagenesis (2008) *BBA Prot. & Proteomics.* 1784, 1310-1318. (10) Domain truncation studies reveal that the streptokinase-plasmin activator complex utilizes long range protein-protein interactions with macromolecular substrate to maximize catalytic turnover (2003) *J. Biol Chem.* 278, 30569-30577. (11) Involvement of a nine-residue loop of streptokinase in the generation of macromolecular substrate specificity by the activator complex through interaction with substrate kringle domains (2002) *J. Biol Chem.* 277, 13257-13267. (12) Cloning, characterization, and expression studies in *Escherichia coli* of growth hormone cDNAs from Indian zebu cattle, reverine buffalo, and beetal goat (2002) *Anim Biotechnol.* 13, 179-93. (13) Function of the central domain of streptokinase in substrate plasminogen docking and processing revealed by site-directed mutagenesis (1999) *Protein Sci.* 8, 2791-2805. (14) Role of the amino-terminal region of streptokinase in the generation of a fully functional plasminogen activator complex probed with synthetic peptides (1998) *Protein Sci.* 7, 637-648. (15) Mapping of the plasminogen binding site of streptokinase with short synthetic peptides (1997) *Protein Sci.* 6, 1284-1292.

Society Memberships: Fellow, Indian National Science Academy, New Delhi, Indian Academy of Science, Bangalore, and NASI, Allahabad; Fellow, Association of Microbiologists of India; Member, Guha Research Conference.

Awards & Distinctions: National Biotechnology Product Development Award 2002 • CSIR Technology Shield 2001-2002 • The Vasvik Industrial Award 2000 • Ranbaxy Award in Pharmaceutical Sciences, 2003, Vigyan Rattan Award 2014, Shri Om Prakash Bhasin Award 2013, CSIR, Technology Award for Business Development and Technology Marketing 2014 etc.