



## Benjamin C. S. Sutton, Ph.D.

*B.Sc. (Hon) Botany with Chemistry, University of Reading, U.K., 1982*

*Ph.D., Department of Plant Science, University of British Columbia, 1982*

*Canadian Securities Course Certificate, Canadian Securities Institute, 1982*

### Professional Background

Dr. Sutton earned a B.Sc. (Hon) in Botany and Chemistry, and a Ph.D. in Plant Science. He is an internationally recognized scientist having published extensively and co-authored two patents on the development and application of somatic embryogenesis, molecular biology and other biotechnologies for capturing genetic gain in forestry. Dr. Sutton has spent twenty years initiating, developing and managing a variety of biotechnology business ventures. Throughout his work he has become an experienced corporate manager and entrepreneur.

### Selected Experience

#### Forest Biotechnology Research

- ◆ Developed the British Columbia Forest Biotechnology Centre, a \$3 million annual contract research and development business, and managed it sustainably for 10 years attracting internationally renowned scientists in the field.
- ◆ Sold contract research and financed technology development, research collaborations and joint ventures in North America, South Africa, New Zealand and Chile.
- ◆ Managed research in various aspects of forest biotechnology with special emphasis on molecular genetics of forest species.

#### Business Development and Investment

- ◆ Dr. Sutton is an accomplished herbalist and essential oil producer, having established and operated a successful lavender farm in Saltspring Island, British Columbia, Canada, using selected clones of advanced genotypes.
- ◆ Established and managed Silvagen Inc., a start-up venture to commercialize somatic embryogenesis

and genetic transformation of conifers in North American and other world markets, and ran the Company as President and CEO until its merger with Pacific Biotechnologies Inc.

- ◆ Planned and directed several rounds of seed, senior and secondary financing into Silvagen Inc., attracting over US\$12 million in investment.
- ◆ Negotiated and directed the merger of Silvagen Inc. with Pacific Biotechnologies Inc. to form CellFor Inc., the largest independent producer of genetically advanced conifer clonal seed in the World

### Marketing and Joint Venture Development

- ◆ Sold and negotiated numerous commercial contracts which allowed Silvagen and subsequently CellFor Inc. to obtain rights to products developed with strategic partners in USA, New Zealand, Australia, Chile, Argentina and South Africa.
- ◆ Established GenFor S.A., a forest biotechnology joint venture in partnership with Fundación Chile and Interlink of the US, to produce and market advanced genotypes of Radiata pine and Southern pines in Chile, Argentina, Brazil and Uruguay.

### Boards & Committees

- ◆ Chairman of Agrisoma Biosciences Inc.
- ◆ Director of Silvagen Holdings Inc.
- ◆ Past director of the Institute of forest Biotechnology (Research Triangle Park), North Carolina
- ◆ Past member of the Genome BC Scientific Steering Committee
- ◆ Founding board member of the B.C. Biotechnology Alliance



- ◆ Past member of the Forest Renewal BC research grants Review committee in tree genetics
- ◆ Past Vice Chairman, Biotechnology Advisory Committee for B.C. "Strategic Planning for Applied Research and Knowledge"
- ◆ Past panel member of NSERC Strategic Grants Selection Panel on Biotechnology
- ◆ Past panel member of Science Council of British Columbia, Biotechnology AGAR Grant selection panel

### Other Affiliations

- ◆ Canadian Institute of Forestry
- ◆ Canadian Tree Improvement Association
- ◆ Technology Association of the Pulp and Paper Industries

### Employment History

*Agrisoma Biosciences Inc.*, Burnaby, BC, Canada,

- 2004 – Present. Chairman
- 2003 – 2004. Director

*CellFor Inc.*, Vancouver, BC, Canada  
2003 – Present. Business development Advisor

*CellFor Inc.*, Vancouver, BC, Canada,  
2000 – 2002. Executive Vice President Business Development

*Silvagen Inc.* Vancouver, BC, Canada,  
1996 - 1999. President and CEO

*B.C. Research Inc.*, Vancouver, BC, Canada  
1993 – 1996. Director, Biotechnology

*University of British Columbia*, Vancouver, BC, Canada  
1989 – 2003. Adjunct Professor, Forest Science Department

*British Columbia Research Corporation*, Vancouver, BC, Canada

- 1988 - 1993. Head, Forest Biotechnology Centre
- 1987 – 1988. Research Scientist, Forest Biotechnology Centre

*Agrogen Biotechnologies Inc.*, Vancouver, BC, Canada  
1986 – 1987. Project Leader Molecular Biology

*Agriculture Canada*, Vancouver Research Station, BC, Canada  
1984 – 1985. Research Scientist

*McGill University, Department of Biology*, Montreal, Quebec, Canada  
1982 – 1984. Post-doctoral Fellow, Genetic Manipulation Research Group

### Patents

"A process of increasing plant growth and yield and modifying cellulose production in plants" US Patent # 6,420,629. B.C Research Inc. Xue, B.G. Newton, C. H. Sutton; B. C. S. Gawley. J.R. Ellis D.D. (July 2002)

"Maturation of somatic embryos" US Patent # 6,200,809. CellFor Inc. Klimaszewska, K. Sutton B. C. S. , Polonenko; D.R. Cyr; D. R. Stodola, T.F. (Mar 13 2001)

### Technical Publications

Sutton, B.C.S., S.M. Attree, Y.A. El-Kassaby, S.C. Grossnickle, and D.R. Polonenko. 2004. Commercialisation of somatic embryogenesis for plantation forestry. In: Plantation forest biotechnology for the 21st century (Walter, C. and M. Carson, eds). Research Signpost, Kerala, India, 2004. (in press).

Sutton, B.C.S. 2002. Commercial delivery of genetic improvement to conifer plantations using somatic embryogenesis. *Ann. For. Sci.* 59: 657-661

Cyr D., Attree S.M., El-Kassaby Y.A., Ellis, D.D., Polonenko, D.R., Sutton, B.C.S. 2001. Application of somatic embryogenesis to tree improvement in conifers. In: *Molecular Breeding of Woody Plants*. Morohoshi N., Kamamine, A. (eds). Proceedings of the International Wood Biotechnology Symposium (IWBS), Narita, Chiba, Japan, 14-17 March 2001. Elsevier Science B.V. pp. 305-312

Klimaszewska K., Bernier-Cardou M., Cyr D.R., Sutton B.C.S. 2000. Influence of gelling agents on culture medium gel strength, water availability, tissue water potential, and maturation response in



- embryogenic cultures of *Pinus strobus* L. In Vitro Biol. 36:279-286
- Sutton, B., D. Polonenko, D.R. Cyr, S. Grossnickle. 1999. Commercialization of somatic embryogenesis in forestry. Biotechnology International. 2:254-260
- Sutton, B.C.S. and D.R. Polonenko. 1999. Commercialization of plant somatic embryogenesis. Somatic Embryogenesis in Woody Plants, Volume 4. S.M. Jain, P.K. Gupta, and R.J. Newton (Eds.). Kluwer Academic Publishers, Dordrecht, pp. 263-291
- Fan, S., S.C. Grossnickle and B.C.S. Sutton. 1999. Relationships between gas exchange and carbon isotope discrimination of Sitka x interior spruce genotypes, and ribosomal DNA markers. Tree Physiol. 10:689-694
- Grossnickle, S.C. and B.S.C. Sutton. 1999. Applications of biotechnology for forest regeneration. New For. 17:213-226
- Grossnickle, S.C., B.C.S. Sutton, S. Fan, J. King. 1997. Characterization of Sitka x interior spruce hybrids: A biotechnological approach to seedlot determination. Forestry Chronicle 73:357-362
- Fan, S., S.C. Grossnickle, B.C.S. Sutton. 1997. Relationship between gas exchange adaptations of Sitka x interior spruce genotypes and ribosomal DNA markers. Tree Physiol. 17:115-123
- Sutton B., Polonenko D, Ingraham K., Eastman A, S.C. Grossnickle. 1997. Operational production of seedlings for reforestat TAPPI Press, Atlanta, GA, ISBN 0-89852-695-7. pp. 191-194
- Grossnickle, S.C., B.C.S. Sutton, R.S. Folk, J.R. Gawley. 1996. Relationship between nuclear DNA markers and physiological parameters for Sitka x interior spruce populations. Tree Physiol. 16: 547-555
- Roberts, D.R., F.B. Webster, D.R. Cyr, T.K. Edmonds, S.M.A. Grimes, B.C.S. Sutton. 1995. A delivery system for naked somatic embryos of interior spruce. In: Automation and Environmental Control in Plant Tissue Culture; Eds. J. Aitken-Christie, T.Kozai & M. Lila Smith . Kluwer Academic Publishers, The Netherlands. pp.245-256
- Roberts, D.R., and Sutton, B.C.S. 1995. Research in Conifer Somatic Embryogenesis. In: Status of Forest Biotechnology in Canada. Charest, P., Ed. Forestry Canada Publication
- Sutton, B.C.S., S.C. Pritchard, J.R. Gawley, C.H. Newton, G.K. Kiss. 1994. Analysis of Sitka/interior spruce introgression in British Columbia using cytoplasmic and nuclear DNA probes. Can.J.For.Res. 24:278-285
- Sutton, B.C.S., S.C. Grossnickle, D.R. Roberts, J. Russell, G. Kiss. 1993. Somatic embryogenesis and tree improvement in interior spruce. Journal of Forestry. 91:34-38
- Webb, D.T., D. E. Ellis, D.R. Roberts, B.C.S. Sutton, B.S. Flinn, F. Webster, W. Lazaroff. 1993. Progress towards the genetic engineering of conifers. Proceedings: IUFRO Group meeting, Genetic resistance to disease and insects, Iowa State University, Ames, October 16-21, 1988
- Newton, C.H., B.F. Flinn, L.C. Shimin and B.C.S. Sutton. 1992. Vicilin-like storage proteins in somatic embryos of white spruce (*Picea glauca*). Plant Mol.Biol. 20:315-322
- Sutton, B.C.S., D. Flanagan, Y.A. El-Kassaby. 1991. A simple and rapid method for species determination of spruce seedlots using restriction fragment length polymorphism. Silvae Genetica 40:119-123
- Sutton, B.C.S., D.J. Flanagan, R. Gawley, C.H. Newton, D. Lester, Y.A. El-Kassaby. 1991. Inheritance of chloroplast and mitochondrial DNA in *Picea* and composition of hybrids from introgression zones. Theor. Appl. Genet. 82:242-248.
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Roberts D.R., B.S. Flinn, D.T. Webb, F. Webster B.C.S. Sutton 1989. Characterization of immature embryos of interior spruce by SDS-PAGE and microscopy in relation to their competence for somatic embryogenesis. Plant Cell Reports 8:285-288

Korber, D.R., J.R. Lawrence, B.Sutton, D.E. Caldwell. 1989. Effect of laminar flow velocity on the kinetics of surface recolonization by Mot<sup>+</sup> and Mot<sup>-</sup> *Pseudomonas fluorescens*. Microb Ecol. 18:1-19

Ellis, D., D. Roberts, B. Sutton, W. Lazaroff, D. Webb. 1989. Transformation of white spruce and other conifer species by *Agrobacterium tumefaciens*. Plant Cell Reports. 8:16-20

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Sutton, B.C.S., J. Stanley, M. Zelochowska and D.P.S. Verma. 1984. Isolation and expression of cloned DNA encoding an early soybean nodulation function. J. Bacteriol. 158: 920-927

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