

Resume – John Sanford

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Current Positions:

President – Feed My Sheep Foundation

President – Logos Research Associates

Academic Positions Held:

- 1998-2017 - Courtesy Associate Professor, Dept. of Horticulture, Cornell University
- 1994-1998 Associate Professor, Dept. of Horticultural Sciences, Cornell University. Percent effort reduced first to 80%, then to 40%.
- 1986-1994 Associate Professor, Dept. of Horticultural Sciences, Cornell University.
- 1980-1986 Assistant Professor Dept. of Horticultural Sciences, Cornell University.

Academic Honors:

- Adjunct Assoc. Prof. of Botany - Duke University, Durham, NC.
- Distinguished Inventor Award (W. Greatbatch, J. Sanford) 1995, Gene therapy for retroviruses. Central New York Patent Law Association.
- Distinguished Inventor Award (J. Sanford, E. Wolf, N. Allen) 1990, Central New York Patent Law Association.

Education:

- University of Minnesota-St. Paul BS 1976 Horticulture
- University of Wisconsin-Madison MS 1978 Plant Breeding/Plant Genetics
- University of Wisconsin-Madison Ph.D. 1980 Plant Breeding/Plant Genetics

My most significant accomplishments have been:

- Over 100 publications, plus several dozen patents and three books.
- Lead editor of 2013 book: *Biological Information – New Perspectives*.
- Primary organizer of 2011 Cornell symposium: *Biological Information – New Perspectives*.
- Co-developer of *Mendel's Accountant* – today's most advanced forward-time population genetics simulation program.
- Primary inventor of the biolistic (gene gun) process.

- Co-inventor of the pathogen-derived resistance (PDR) process.
- Co-inventor of the genetic vaccination process.
- Primary inventor of numerous conventionally-bred fruit varieties.
- Most of the world's transgenic crop acreage were transformed via my biolistic process
- I have helped develop and use the *Skittle* program to study genome-wide patterns in higher genomes.

Most recent publications:

Basener, W., Sanford J. 2017. The Fundamental Theorem of Natural Selection with Mutations. Journal of Mathematical Biology. Journal of Mathematical Biology. <https://link.springer.com/article/10.1007%2Fs00285-017-1190-x>

Rupe, C., Sanford, J. 2017. *Contested Bones*. FMS Publications. Waterloo, NY. 334 pages.

Sanford, J., Brewer, W., Smith F., and Baumgardner, J. 2015. The Waiting Time Problem in a Model Hominin Population. Theoretical Biology and Medical Modelling 12:18 <http://www.tbiomed.com/content/12/1/18>

Brewer, W., Scott, W., and Sanford, J. 2015. "An Integrated Cloud Platform for Rapid Interface Generation, Job Scheduling, Monitoring, Plotting, and Case Management of Scientific Applications", Proc. of the International Conference on Cloud Computing Research and Innovation, IEEE Press, October 2015, pp. 156-165, doi:10.1109/ICCCRI.2015.24.

Sanford, J.C. 2014. *Genetic Entropy*. Fourth edition. FMS Publications. Waterloo, NY. 271 pages.

Marks R.J., Behe M.J., Dembski W.A., Gordon B.L., and Sanford J.C. (2013). Biological Information – New Perspectives. World Scientific Publishing Co., Singapore (pp 1-559). <http://www.worldscientific.com/worldscibooks/10.1142/8818#t=oc>

Montañez, G.; Marks R.; Fernandez, J. & Sanford, J. (2013). Multiple overlapping genetic codes profoundly reduce the probability of beneficial mutation, In: Biological Information – New Perspectives (pp 139-167). http://www.worldscientific.com/doi/pdf/10.1142/9789814508728_0006

Sanford, J. (2013). Session II Chair - Biological Information and Genetic Theory: Introductory Comments, In: Biological Information – New Perspectives (pp 203-209). http://www.worldscientific.com/doi/pdf/10.1142/9789814508728_others02

Gibson, P.; Baumgardner, J.; Brewer, W. & Sanford, J. (2013). Can Biological Information Be Sustained By Purifying Natural Selection? In: Biological Information – New Perspectives (pp 232-263). http://www.worldscientific.com/doi/pdf/10.1142/9789814508728_0010

Sanford, J.; Baumgardner, J. & Brewer, W. (2013). Selection Threshold Severely Constrains Capture of Beneficial Mutations, In: Biological Information – New Perspectives (pp 264-

297).http://www.worldscientific.com/doi/pdf/10.1142/9789814508728_0011

Brewer, W.; Baumgardner, J. & Sanford, J. (2013). Using Numerical Simulation to Test the “Mutation-Count” Hypothesis, In: Biological Information – New Perspectives (pp 298-311).http://www.worldscientific.com/doi/pdf/10.1142/9789814508728_0012

Baumgardner J.; Brewer, W.; Sanford, J. (2013). Can Synergistic Epistasis Halt Mutation Accumulation? Results from Numerical Simulation, In: Biological Information – New Perspectives (312-337).http://www.worldscientific.com/doi/pdf/10.1142/9789814508728_0013

Nelson, C.; & Sanford, J. (2013). Computational evolution experiments reveal a net loss of genetic information despite selection, In: Biological Information – New Perspectives (338-368). http://www.worldscientific.com/doi/pdf/10.1142/9789814508728_0014

Brewer, W.; Smith, F. & Sanford, J. (2013). Information loss: potential for accelerating natural genetic attenuation of RNA viruses, In: Biological Information – New Perspectives (369-384).http://www.worldscientific.com/doi/pdf/10.1142/9789814508728_0015

Carter R.C. & Sanford, J.C. (2012). A new look at an old virus: patterns of mutation accumulation in the human H1N1 influenza virus since 1918. Theoretical Biology and Medical Modeling 9:42doi:10.1186/1742-4682-9-42. <http://www.tbiomed.com/content/pdf/1742-4682-9-42.pdf>

Sanford, J. & Nelson, C. (2012). The Next Step in Understanding Population Dynamics: Comprehensive Numerical Simulation, Studies in Population Genetics, in: M. Carmen Fusté (Ed.), ISBN: 978-953-51-0588-6, InTech, Available from: <http://www.intechopen.com/books/studies-in-population-genetics/the-next-step-in-understanding-population-dynamics-comprehensive-numerical-simulation>.

Nelson, C.W. & Sanford, J.C. (2011). The Effects of Low-Impact Mutations in Digital Organisms. Theoretical Biology and Medical Modeling, Vol. 8, (April 2011), p. 9. <http://www.tbiomed.com/content/pdf/1742-4682-8-9.pdf>

Seaman, J. and J.C. Sanford. 2009. Skittle: a two dimensional genome visualization tool. BMC Bioinformatics 10:452.(<http://www.biomedcentral.com/1471-2105/10/452>).

Sanford, J.C., Baumgardner, J., Gibson, P., Brewer, W., ReMine, W. (2007). Mendel,s Accountant: a biologically realistic forward-time population genetics program. SCPE 8(2): 147-165.<http://www.scpe.org/index.php/scpe/article/view/407>.

Sanford, J.C., Baumgardner, J., Gibson, P., Brewer, W., ReMine, W. (2007). Using computer simulation to understand mutation accumulation dynamics and genetic load. In Shi et al. (Eds.), ICCS 2007, Part II, LNCS 4488 (pp.386-392), Springer-Verlag, Berlin, Heidelberg. <http://www.iccs-meeting.org/iccs2007/proceedings.html>

DeGray, G., Rajasekarana, K., Smith F. Sanford, J. Daniel H., 2001. Expression of an antimicrobial peptide via the chloroplast genome to control phytopathogenic bacteria and fungi. Plant Physiology 127 (3): 852-

862.

Production of transgenic poinsettia (2006). US Pat. 7119262 - Filed Jul 31, 1997 - Sanford Scientific, Inc. ... Geneva, NY (US); Tau-San Chou, Batavia, IL (US); Robert Eisenreich, North Aurora, IL (US); John Sanford, Geneva, NY (US); Alan Blowers, St. Charles, ...

Expression of magainin and PGL classes of antimicrobial peptide genes in plants, and their use. (2001). US Pat. 6235973 - Filed Jul 31, 1998 - Sanford Scientific, Inc.... Geneva, NY (US); Alan D. Blowers, St. Charles, IL (US); Joyce Van Eck, Ithaca; John Sanford, Geneva, both of NY (US) (73) Assignee: Sanford Scientific, ...

Earlier Publications relating to genetics and biotechnology:

Sanford, J.C. 1982. Pollen studies using a laser microbeam. In D.L. Mulcahy and E. Ottaviano (eds.) Pollen: Biology and Implications for Breeding, Proceedings of the International Symposium on Pollen Biology. Springer-Verlag, NY. p. 107-115.

Sanford, J.C., Y.S. Chyi, and B.I. Reisch. 1984. An attempt to induce "egg transformation" in *Lycopersicon esculentum* using irradiated pollen. *Theoretical and Applied Genetics* 67:553-558.

Sanford, J.C., Chyi, Y.S., and B.I. Reisch. 1984. Attempted "egg transformation" in *Zea mays* L., using irradiated pollen. *Theoretical and Applied Genetics* 68:269-275.

Chyi, Y.S., J.C. Sanford, and B.I. Reisch. 1984. Further attempts to induce "egg transformation" using irradiated pollen. *Theoretical and Applied Genetics* 68:277-283.

Sanford, J.C., N.F. Weeden, and Y.S. Chyi. 1984. Regarding the novelty and breeding value of protoplast-derived variants of Russet Burbank (*Solanum tuberosum* L.) *Euphytica* 33:709-715.

Sanford, J.C., K. Skubik, and B.I. Reisch. 1984. Attempted transformation in tomato and corn, using incubation of pollen with genomic DNA. *Theoretical and Applied Genetics* 69:571-574.

Sanford, J.C., and S.A. Johnston. 1985. The concept of parasite derived resistance. *Journal of Theoretical Biology* 113: 395-405.

Chyi, Y.S. and J.C. Sanford. 1985. "Egg transformation" induced by irradiated pollen in *Nicotiana* - a re-examination. *Theoretical and Applied Genetics* 70:433-439.

Sanford, J.C. and K.A. Skubik. 1985. Attempted pollen mediated transformation with Ti-plasmids. In: D.L. Mulcahy (ed.) *Biotechnology and Ecology of Pollen*. Proceedings of International Symposium. Springer-Verlag, NY. p. 71-76.

Simon, C.J., and J.C. Sanford. 1985. Prospects for pollen cell selection for resistance to various chemical

agents. In: D.L. Mulcahy (ed.). *Biotechnology and Ecology of Pollen*. Proceedings of International Symposium. Springer-Verlag, NY. p. 107-112.

Grummet, R., J. C. Sanford, and S. A. Johnston. 1986. A demonstration of pathogen-derived resistance using *E. coli* and the bacteriophage, QB. C. Arntzen and C. Ryan (eds.). *Molecular Strategies for Crop Protection*. UCLA Symposium on Cellular and Molecular Biology, V. 48. A. R. Liss. NY. pp 3-12.

Sanford, J. C., T. M. Klein, E. D. Wolf, and N. Allen. 1987. Delivery of substances into cells and tissues using a particle bombardment process. *Journal of Particulate Science and Technology* 5:27-37.

Klein, T. M., E. D. Wolf, R. Wu, and J. C. Sanford. 1987. High-velocity microprojectiles for delivering nucleic acids into living cells. *Nature* 327:70-73.

Grummet, R., J. C. Sanford, and S. A. Johnston. 1987. Pathogen-derived resistance to viral infection using a negative regulatory molecule. *Virology* 161:561-569.

Sanford, J. C. 1988. Applying the PDR principle to AIDS. *Journal of Theoretical Biology* 130:469-480.

Sanford J. C. 1988. Regarding early claims of pollen-mediated transformation. in Ed. F.A. Valentine. *Forest and Crop Biotechnology -Progress and Prospects*. Spinger-Verlag, NY. pp163-173.

Pang, S. Z., and J. C. Sanford. 1988. Agrobacterium-mediated gene transfer in papaya. *J. Amer. Soc. Hort. Sci.* 113:287-291.

Klein, T. M., M. E. Fromm, A. Weissinger, D. Tomes, S. Schaaf, M. Sleeten, and J. C. Sanford. 1988. Transfer of foreign genes into intact maize cells with high velocity microprojectiles. *PNAS* 85:4305-4309.

Klein, T. M., M. E. Fromm, T. Gradziel, and J. C. Sanford. 1988. Factors influencing gene delivery into *Zea mays* cells by high-velocity microprojectiles. *Bio/Technology* 6:559-563.

Johnston, S. A., P.Q. Anziano, K. Shark, J. C. Sanford, and R.A. Butow. 1988. Mitochondrial transformation in yeast by bombardment with microprojectiles. *Science* 240:1538-1541.

Boynton, J. E., N. W. Gillham, E. H. Harris, J. P. Hosler, A. M. Johnson, A. R. Jones, B. L. Randolph-Anderson, D. Robertson, T. M. Klein, K. Shark, J. C. Sanford. 1988. Chloroplast transformation of *Chlamydomonas* with high velocity microprojectiles. *Science* 240:1534-1538.

Fox, T. D., J. C. Sanford, and T. W. McMullin. 1988. Plasmids can stably transform yeast mitochondria totally lacking endogenous mtDNA. *PNAS* 85:7288-7292.

Klein, T.M., E.C. Harper, Z. Svab, J.C. Sanford, M.E. Fromm, P. Maliga. 1988. Stable genetic transformation of intact *Nicotiana* cells by the particle bombardment process. *PNAS* 85:85028505.

Wang, Y. C., T. M. Klein, M. Fromm, J. Cao, J. C. Sanford, and R. Wu. 1988. Transient expression of foreign genes in rice, wheat, and soybean cells following particle bombardment. *Plant Molecular Biology* 11: 433-439 .

Sanford, J. 1988. The biolistic process. *Trends in Biotechnology* 6:229-302.

Liu, Z. R., and J. C. Sanford. 1988. Plant regeneration by organogenesis from strawberry leaf and runner tissue. *HortScience* 23:1057-1059.

Blowers, A.D., L. Bogorad, K.B. Shark, G.N. Ye, and J.C. Sanford. 1989. Studies on *Chlamydomonas* chloroplast transformation: foreign DNA can be stably maintained in the chromosome. *The Plant Cell* 1:123-132.

Klein, T.M., L. Kornstein, J.C. Sanford, and M.E. Fromm. 1989. Genetic transformation of maize cells by particle bombardment. *Plant Physiology* 91: 440-444.

Daniell, H., J. Vivekananda, B.L. Nielsen, G.N. Ye, K.K. Tewari, and J.C. Sanford, 1990. Transient foreign gene expression in chloroplasts of cultured tobacco cells after biolistic delivery of chloroplast vectors. *PNAS* 87: 88-92.

Cummings, D.J., J.M. Dominico, and J.C. Sanford. 1990. Mitochondrial DNA from *Podospora anserina*: transformation to senescence via projectile injection of plasmids. In: *Molecular Biology of Aging*. ©Alan R. Liss, NY pp91-101.

Armeleo, D., G.N. Ye, S.A. Johnston, T.M. Klein, K.B. Shark, and J.C. Sanford. 1990. Biolistic nuclear transformation of *Saccharomyces cerevisiae* and other fungi. *Current Genetics* 17:97-103.

Cao, J., Y-C. Wang, T.M. Klein, J. C. Sanford, and R. Wu. 1990. Transformation of rice and maize using the biolistic process. In: *Plant Gene Transfer-1989 UCLA Symposium*. ©Alan R. Liss, Inc., pp21-33.

Sanford, J. 1990. Biolistic plant transformation. *Physiologia Plantarum* 79:206-209.

Fitch, M.M., R. M. Manshardt, D. Gonsalves, J. L. Slightom, H. Quemada, and J. C. Sanford. 1990. Stable transformation of papaya via microprojectile bombardment. *Plant Cell Reports* 9:189-194.

Ye, G.N., H. Daniell, and J.C. Sanford. 1990. Optimization of delivery of foreign DNA into higher-plant chloroplasts. *Plant Molecular Biology* 15: 809-819.

Sanford, J.C., 1990. The biolistic process -an emerging tool for research and clinical applications. *Proceedings of the Biomedical Society*. Virginia Polytech. Inst. Blacksburg, VA. D.C. Milulecky and A.M. Clarke (eds). New York University Press, NY. pp 89-98.

Russell, J.A., M.K. Roy, and J.C. Sanford. 1990. Cell injury as a limiting factor in stable biolistic plant transformation. *In Vitro Cellular and Developmental Biology* 26:43A.

Shark, K.B., F.D. Smith, P.R. Harpending, J.L. Rasmussen, and J.C. Sanford. 1991. Biolistic transformation of a prokaryote: *Bacillus megaterium*. *Applied Environmental Microbiology* 57:480-485.

Williams, R.S., S.A. Johnston, M. Reidy, M.J. DeVit, S.G. McElligott, and J.C. Sanford. 1991. Introduction of foreign genes into tissues of living mice by DNA-coated microprojectiles. *Proceedings of the National Academy of Science* Vol. 88:2726-2730.

Sanford, J.C., M.J. DeVit, J.A. Russell, F.D. Smith, P.R. Harpending, M.K. Roy, and S.A. Johnston. 1991. An improved, helium driven biolistic device. *Technique* 3:3-16.

Johnston, S.A., M. Riedy, M.J. DeVit, J.C. Sanford, S. McElligott, and R. S. Williams. 1991. Biolistic transformation of animal tissue. *In Vitro Cellular and Developmental Biology* 27P:11-14.

Russell, J.A., M.K. Roy, and J.C. Sanford. 1992. Physical trauma and tungsten toxicity reduce the efficiency of biolistic transformation. *Plant Physiology* 98:1050-1056.

Smith, F.D., P.R. Harpending, and J.C. Sanford. 1992. Biolistic transformation of prokaryotes factors that effect transformation of very small cells. *Journal of General Microbiology* 138:239-248.

Pang, Sheng-Zhi, S. Oberhaus, J. Rasmussen, D. Knipple, J. Bloomquist, D. Dean, and J. Sanford. 1992. Expression of a scorpion insectotoxin peptide in yeast, bacteria and plants. *Gene* 116: 165-172.

Pang, Sheng-Zhi, J. Rasmussen, G.N. Ye, and J.C. Sanford. 1992. Use of the signal peptide of *Pisum vicilin* to translocate b-glucuronidase in *Nicotiana tabacum*. *Gene* 112(2):229-234.

Russell, J.A., M.K. Roy, and J.C. Sanford. 1992. Physical trauma and tungsten toxicity reduce the efficiency of biolistic transformation. *Plant Physiology* 98:1050-1056.

Russell, J.A., M.K. Roy, and J.C. Sanford. 1992. Major improvements in biolistic transformation of suspension cultured tobacco cells. *In Vitro Cell. Dev. Biol.* 28P:97-1105.

Hamilton, D.A., M. Roy, J. Rueda, R.K. Sindhu, J. Sanford, and J.P. Mascarenhas. 1992. Dissection of a pollen-specific promoter from maize by transient transformation assays. *Plant Molecular Biology* 18:211-218.

Fitch, M.M., R.M. Manshardt, D. Gonsalves, J.L. Slightom, and J.C. Sanford. 1992. Virus resistant papaya plants derived from tissues bombarded with the coat protein gene of papaya ringspot virus. *Bio/Technology* 10:1466-1472.

Sanford, J.C., F.D. Smith, and J.A. Russell. 1993. Optimizing the biolistic process for different biological applications. *Methods in Enzymology* 217:483-509.

Liu Z.R., Sanford J.C., 1993. Investigation of the mechanism underlying the inhibitory effect of

heterologous ras genes in plant cells. *Plant Mol Biol.* 22(5):751-65.

Rasmussen J.L., J.R. Kikkert, M.K. Roy, and J.C. Sanford, 1994. Biolistic transformation of tobacco and maize suspension cells using bacterial cells as microprojectiles. *Plant Cell Reports* 13:212-217.

Ye, Xiaojian, S.K. Brown, R. Scorza, J. Cordts, J. Sanford. 1994. Genetic transformation of peach tissues by particle bombardment. *J. Amer. Soc. Hort. Science* 119(2): 367-373.

Liu, Z.R., J. Ma and J.C. Sanford. 1995. The location of untranscribed DNA sequences within ras genes essential for eliciting plant growth suppression. *Plant Mol. Biol.* (28 (1): 195-201).

Kamo, K.; Blowers, A.; Smith, F.; Van Eck, J.; Lawson, R. and Sanford, J. 1995. Stable transformation of *Gladiolus* using cormels. *Plant Science* 110:105-111.

Kamo, K.; Blowers, A.; Smith, F.; Van Eck, J.; Lawson, R. and Sanford, J. 1995. Stable transformation of *Gladiolus* using suspension cells and callus. *J. Am., Soc., Hort. Sci.* 120:347-352.

Smith, F.D., D.M. Gadoury, P.R. Harpending, and J.C. Sanford. 1995. Biolistic transformation of the obligate parasite *Uncinula necator*. *Phytopathology* (-).

Ye, G.N., S.Z. Pang, and J.C. Sanford. 1995. Biolistic delivery of a psbA promoter driven NPTII construct into tobacco. *Plant Cell Reporter* (-).

Aragao, F.J.L., Barros, L.M.G., Brasileiro, A.C.M. Ribeiro, S.G., Smith F.D. Sanford, J.C., Faria, J.C., Rech, E.L., 1996. Inheritance of foreign genes in transgenic bean (*Phaseolus vulgaris* L.) co-transformed via particle bombardment. *Theoretical and Applied Genetics* 93(1-2): 142-150.

Kikkert, J.R., G.A. Humiston, M.K. Roy, and J.C. Sanford. 1999. Biological projectiles (phage, yeast, bacteria) for genetic transformation of plants. *In Vitro Cellular and Developmental Biology - Plant* 35:43-50.

DeGray, G., Rajasekarana, K., Smith F. Sanford, J. Daniel H., 2001. Expression of an antimicrobial peptide via the chloroplast genome to control phytopathogenic bacteria and fungi. *Plant Physiology* 127 (3): 852-862.

Earlier Publications Relating to Plant Breeding and Horticulture:

Sanford, J.C. and R.E. Hanneman, Jr. 1979. Reciprocal Differences in the photoperiod reaction of hybrid populations in *Solanum tuberosum*. *Am. Potato J.* 56:531-540.

Sanford, J. C. and R.E. Hanneman Jr. 1981. The use of bees for the purpose of inter-mating in potato. *Am.Potato J.* 58:481-485.

Sanford, J.C. and R.E. Hanneman. 1982. A possible heterotic threshold in potato and its implications for

breeding. *Theoretical and Applied Genetics*. 61: 151-159.

Sanford, J.C. and R.E. Hanneman. 1982. Large yield differences between reciprocal families of *Solanum tuberosum*. *Euphytica* 31:1-12.

Sanford, J.C. and R.E. Hanneman. 1982. Intermating of potato and spontaneous sexual polyploidization -effects on heterozygosity. *Am. Potato J.* 59:407-414.

Sanford, J.C. 1983. Ploidy manipulations in fruit breeding. In: J. Janick and J. N. Moore (eds.) *Methods in Fruit Breeding*. Purdue Univ. Press, West Lafayette, IN pp. 100-123.

Way, R.D., J.C. Sanford, and A.N. Lakso. 1983. Breeding for higher fruit yields. IN: J. Janick and J.N. Moore (eds) *Methods in Fruit Breeding*. Purdue Univ. Press, West Lafayette, IN pp. 353-368.

Sanford, J.C. 1984. Strawberry cultivars for New York. *New York Food and Life Science Bulletin* No. 107.

J. P. Tompkins, D.K. Ourecky, J.C. Sanford. 1984. Growing strawberries in New York State. *New York State College of Agriculture and Life Sciences. Information Bulletin* No. 15.

Sanford, J.C. and J.E.Reich, 1985. Breeding progress in strawberry cultivars adapted to Northeastern United States. *Advances in Strawberry Production*,4:39-44.

Sanford, J.C. and D.K. Ourecky. 1982. 'Royalty' -a purple-red raspberry. *New York Food and Life Science Bulletin*. No. 97.

Sanford, J.C., D.K. Ourecky, J.E. Reich, H.S. Aldwinckle. 1982. 'Honeoye' and 'Canoga' strawberries. *HortScience* 17:982-984.

Sanford, J.C. and D.K. Ourecky. 1983. 'Royalty' purple raspberry. *HortScience* 18:109-110.

Sanford, J.C., D.K. Ourecky, and J.E. Reich, 1985. 'Titan' red raspberry. *HortScience* 20:1133-1134.

Sanford, J.C. and J.E. Reich. 1985. 'Jewel' strawberry. *HortSciences* 20:1136-1137.

Sanford, J.C., D.K. Ourecky, and J.E. Reich. 1985. 'Titan' red raspberry. *New York Food and Life Science Bulletin* No. 111.

Sanford, J.C., D.K. Ourecky, and J.E. Reich. 1985. 'Jewel' strawberry. *New York Food and Life Science Bulletin* No.114.

Sanford, J.C. and J.E. Reich. 1985. Strawberry cultivars adapted to the Northeastern States. *Proceedings of the Western New York State Horticulture Show* 130:140-156.

Sanford, J.C., K.Maloney, and J.E. Reich. 1988. 'Watson' red raspberry. *New York Food and Life Science*

Bulletin.

Simon, C.J. and J. C. Sanford. 1990. Separation of 2n potato pollen from a heterogeneous pollen mixture by velocity sedimentation. HortScience 25:342-344.

Maloney, K., Ourecky, D., Reich, J., J. Sanford. 1991. 'Seneca ' Strawberry. New York Food and Life Science Bulletin No. 136.

Maloney, K., W.F. Wilcox, J.C. Sanford. 1993. Effects of raised beds and Metalaxyl for control of Phytophthora root rot of raspberry. HortScience 28:1106-1108.

Weber, C.A., K.E. Maloney and J.C. Sanford. 2005. Performance of eleven floricanes fruiting red raspberry cultivars in New York. Small Fruits Rev. 4(2):49-56.

Weber, C.A., K.E. Maloney and J.C. Sanford. 2005. Performance of eight primocane fruiting red raspberry cultivars in New York. Small Fruits Rev. 4(2):41-47.

Weber, C.A., K.E. Maloney and J.C. Sanford. 2004. 'Encore' floricanes raspberry. HortScience 39(3):635-636.

Weber, C.A., K.E. Maloney and J.C. Sanford. 2004. 'Prelude' everbearing raspberry. HortScience 39(3):633-634.

Invited Papers:

Sanford, J.C., Y.S. Chyi, and B.I., Reisch. 1984. Attempts to elucidate the phenomenon of "egg transformation" as mediated by irradiated pollen. Symposium on Plant Biotechnology -Gene transfer through non-traditional means. ASA national meetings. Nov. 25-30, Las Vegas. 1984. Agronomy Abstracts published by ASA, p. 87.

Sanford, J.C. 1985. Regarding early claims of pollen-mediated transformation. Forest and Crop Biotechnology -Progress and Prospects. April 18-20, 1985. Syracuse, NY.

Sanford, J.C., T.Klein, and E.D. Wolf. 1986. Altering living cells with particles. Symposium on the manufacture and use of particles. 17th Annual Meeting of The Fine Particles Society -July 31, 1986. San Francisco.

Sanford, J. C. 1988. Biolistic Plant Transformation. First EMBO workshop: Gene Transfer to Plants. September 7-10. Switzerland.

Sanford J.C. 1989. The biolistic process: shooting DNA into cells and tissues. Joint meetings of the Canadian Society of Plant Molecular Biologists and the Genetics Society of Canada, June. Saskatoon, SK.

Sanford J.C. 1989. The biolistic process. Meeting of the American Society of Plant Physiologists. July,

Toronto, Ont.

Sanford J.C. 1989. Biolistic transformation of plants. Advanced course in plant tissue culture and plant transformation. University of Guelph, August, Guelph, Ont.

Sanford J.C. 1990. Utility of the biolistic process. Biomedical Engineering Society Meetings, Virginia Polytech Inst. Blacksburg, VA.

Sanford J.C. 1991. Optimization of the Biolistic Process. International Workshop on the Biolistic Process, sponsored by Agracetus. U of W, Madison, WI.

Sanford J.C. 1992. The Biolistic Process -A simple tool for transforming diverse crop species. Miami Bio/Technology Winter Symposium -Feeding the World in the 21st Century, Jan. 1992.

Sanford J.C. 1993. International Training Course -analysis and manipulation of the plant genome. Irapuato, Mexico. The biolistic Process, where it came from and where its going: and, New directions in biolistic technology, use of biological projectiles for delivery of very HMW DNA.

Sanford J.C. 1993. Governor's Conference on Agricultural Science and Technology. Albany, NY. Genetic Engineering of Plants used in Environmental Horticulture. Nov. 9-10.

Sanford J.C. 1994. Seeley Conference. Cornell University, Ithaca, NY. Gene guns and other weapons in tomorrow's arsenal. June 28-28.

Allowed Patents (based on Google Patent Search):

Method for transporting substances into living cells and tissues and apparatus therefor US Pat. 4945050 - Filed Nov 13, 1984 - Cornell Research Foundation, Inc. John C. Sanford ...

Method for transporting substances into living cells and tissues and apparatus therefor US Pat. 5036006 - Filed Aug 17, 1989 - Cornell Research Foundation, Inc.

METHOD FOR TRANSPORTING SUBSTANCES INTO LIVING CELLS AND TISSUES AND APPARATUS THEREFOR [75] Inventors: John C. Sanford, Geneva; Edward D. Wolf, ...

Parasite-derived resistance US Pat. 5580716 - Filed Nov 17, 1994 - Stephen A. Johnston... N. Gregson, Durham, NC 27701; John C. Sanford, Geneva, NY [73] Assignees: Stephen A. Johnston, Dallas, Tex.; Cornell Research Foundation, Inc., Ithaca, ...

E. coli resistance to Q.beta. virus infection US Pat. 5240841 - Filed Mar 25, 1992 - Duke University [54] E. COLI RESISTANCE TO Q/3 VIRUS INFECTION [75] Inventors: Stephen A. Johnston, Durham, NC; John C. Sanford, Geneva, NY [73] Assignees: Duke University, ...

Method and apparatus for introducing biological substances into living cells US Pat. 5204253 - Filed May

29, 1990 - E. I. Du Pont de Nemours and Company

[54] METHOD AND APPARATUS FOR INTRODUCING BIOLOGICAL SUBSTANCES INTO LIVING CELLS [75]

Inventors: John C. Sanford; Michael J. deVito, both of Geneva, NY; ...

Stable transformation of plant cells US Pat. 5990387 - Filed Oct 6, 1994 - Pioneer Hi-Bred International, Inc. ... [75] Inventors: Dwight T. Tomes, Gummig; Arthur Weissinger, Des Moines, both of Iowa; John C. Sanford, Geneva, NY; Theodore M. Klein, Wilmington, Del. ...

Method for transporting substances into living cells and tissues US Pat. 5100792 - Filed Jan 24, 1989 - Cornell Research Foundation, Inc.

[54] METHOD FOR TRANSPORTING SUBSTANCES INTO LIVING CELLS AND TISSUES [75] Inventors: John C. Sanford, Geneva; Edward D. Wolf, Ithaca; Nelson K. Allen, ...

Apparatus for transporting substances into living cells and tissues US Pat. 5371015 - Filed Jan 9, 1991 - Cornell Research Foundation, Inc. [54] APPARATUS FOR TRANSPORTING SUBSTANCES INTO LIVING CELLS AND TISSUES [75] Inventors: John C. Sanford, Geneva; Edward D. Wolf, Ithaca; Nelson K. Allen, ...

Biolistic apparatus for delivering substances into cells and tissues in a non-lethal manner

US Pat. 5179022 - Filed Feb 11, 1992 - E. I. Du Pont de Nemours & Co. [54] BIOLISTIC APPARATUS FOR DELIVERING SUBSTANCES INTO CELLS AND TISSUES IN A NON-LETHAL MANNER [75] Inventors: John C. Sanford, Geneva; Edward D. Wolf, ...

Method for transporting substances into living cells and tissues and apparatus therefor

US Pat. 5478744 - Filed Aug 12, 1994 - Cornell Research Foundation, Inc. ... METHOD FOR TRANSPORTING SUBSTANCES INTO LIVING CELLS AND TISSUES AND APPARATUS THEREFOR [75] Inventors: John C. Sanford, Geneva; Edward D. Wolf, Ithaca; ...

Stable transformation of plant cells US Pat. 5886244 - Filed May 15, 1998 - Pioneer Hi-Bred International, Inc. John C. Sanford ...

Stable transformation of plant cells US Pat. 6258999 - Filed May 16, 1995 - Pioneer Hi-Bred International, Inc. (54) STABLE TRANSFORMATION OF PLANT CELLS (75) Inventors: Dwight T. Tomes, Gummig, IA (US); Arthur Weissinger, Raleigh, NC (US); John C. Sanford, Geneva, ...

Method of conferring resistance to retroviral infection

US Pat. 5324643 - Filed Jul 29, 1991 - Greatbatch Gen-Aid, Ltd. John C. Sanford ...

Particle-mediated bombardment of DNA sequences into tissue to induce an immune response

US Pat. 6194389 - Filed Apr 11, 1997 - Duke University John C. Sanford ...

Parasite-derived resistance US Pat. 5840481 - Filed Nov 29, 1996 - Cornell Research Foundation, Inc. [54]

PARASITE-DERIVED RESISTANCE [75] Inventors: Stephen A. Johnston, N. Gregson, Durham, NC 27701; John C. Sanford, Geneva, NY [73] Assignees: Cornell ...

Parasite-derived resistance US Pat. 6365396 - Filed May 20, 1999 - Cornell Research Foundation, Inc. ()
PARASITE-DERIVED RESISTANCE (75) Inventors: Stephen A. Johnston, Durham,
NC (US); John C. Sanford, Geneva, NY (US) (73) Assignee: Cornell Research ...

Stable transformation of plant cells US Pat. 6570067 - Filed Jul 30, 1999 - Pioneer Hi-Bred International,
Inc. STABLE TRANSFORMATION OF PLANT CELLS (75) Inventors: Dwight T. Tomes, Gumming, IA (US);
Arthur Weissinger, Raleigh, NC (US); John C. Sanford, ...

Method of conferring resistance to immunodeficiency viral infection
US Pat. 5580761 - Filed Mar 23, 1994 - Greatbatch Gen-Aid Ltd. John C. Sanford ...

Biolistic apparatus for delivering substances into cells and tissues
US Pat. 6004287 - Filed Sep 23, 1998 6004287 BIOLISTIC APPARATUS FOR DELIVERING SUBSTANCES
INTO CELLS AND TISSUES RELATED APPLICATION Applicants claim priority benefits of provisional ...

Expression of magainin and PGL classes of antimicrobial peptide genes in plants, and their use.
US Pat. 6235973 - Filed Jul 31, 1998 - Sanford Scientific, Inc. ... Geneva, NY (US); Alan D. Blowers, St.
Charles, IL (US); Joyce Van Eck, Ithaca; John Sanford, Geneva, both of NY (US) (73) Assignee: Sanford
Scientific, ...

Production of transgenic poinsettia US Pat. 7119262 - Filed Jul 31, 1997 - Sanford Scientific, Inc.
... Geneva, NY (US); Tau-San Chou, Batavia, IL (US); Robert Eisenreich, North Aurora, IL (US); John
Sanford, Geneva, NY (US); Alan Blowers, St. Charles, ...

Plant Patents:

Strawberry Jewel

US Pat. PP5897 - Filed Jul 2, 1985 - Cornell Research Foundation, Inc.
3 John C. Sanford ... [ii] Patent Number: [45] Date of Patent: [54] STRAWBERRY
JEWEL [75] Inventors: John C. Sanford, ...

Strawberry Seneca

US Pat. PP8991 - Filed Feb 26, 1993 - Cornell Research Foundation, Inc.
United States Patent [19] Sanford et al. [54] STRAWBERRY SENECA [15] Inventors:
John Sanford, Geneva, NY; ...

Strawberry plant named ŒL'Amour,

US Pat. PP16480 - Filed Jun 21, 2004 - Cornell Research Foundation, Inc.
... Varietal Denomination: L'Amour (75) Inventors: Courtney A. Weber, Geneva,
NY (US); John C. Sanford, Livonia, ...

Strawberry plant named ŒClancy,

US Pat. PP16571 - Filed Jun 21, 2004 - Cornell Research Foundation Inc.
... Geneva, NY (US); John C. Sanford, Livonia, NY (US); Kevin E. Maloney, Phelps,

NY (US) (73) Assignee: Cornell Research Foundation Inc., Ithaca, ...

Purple raspberry, N.Y. 632

US Pat. PP5405 - Filed Sep 16, 1982 - Cornell Research Foundation, Inc.

United States Patent [19] Sanford et al. [ii] Patent Number: [45] Date of Patent: [54] PURPLE RASPBERRY, NY 632 [75] Inventors: John C. Sanford, Geneva; ...

Red raspberry, N.Y. 883

US Pat. PP5404 - Filed Sep 16, 1982 - Cornell Research Foundation, Inc.

United States Patent [] Sanford et al. [ii] Patent Number: [45] Date of Patent: [54] RED RASPBERRY, NY 883 [75] Inventors: John C. Sanford, Geneva; ...

Red raspberry `Watson`

US Pat. PP7067 - Filed Oct 28, 1988 - Cornell Research Foundation, Inc.

[ii] Patent Number: [45] Date of Patent: [54] RED RASPBERRY 'WATSON' [75] Inventors: John C. Sanford; Jack E. Reich, both of Geneva, NY [73] Assignee: ...

Red raspberry plant named `Encore`

US Pat. PP11746 - Filed Oct 6, 1998 - Cornell Research Foundation, Inc.

23, 2001 (54) RED RASPBERRY PLANT NAMED 'ENCORE' (75) Inventors: John C. Sanford, Geneva; Kevin E. Maloney, Phelps; Jack E. Reich, Geneva, all of NY (US); ...

Red raspberry plant named `Prelude`

US Pat. PP11747 - Filed Oct 6, 1998 - Cornell Research Foundation, Inc.

(12) United States Plant Patent Sanford et al. () RED RASPBERRY PLANT NAMED 'PRELUDE' (75) Inventors: John C. Sanford, Geneva; Kevin E. Maloney, ...