STEPHEN ALBERT JOHNSTON

Director, Center for Innovations in Medicine
Biodesign Institute
Professor School of Life Sciences
Arizona State University

P.O Box 875901
Tempe, AZ 85287-5901
480-727-0792
Stephen.johnston@asu.edu

Education

1975	University of Wisconsin-Madison, B.S. (Molecular Biology)
1976-1981	University of Wisconsin-Madison, Ph.Ds. (Genetics/Biochemistry) and (Plant Genetics/Plant Breeding)
1981-1983	The Pennsylvania State University Medical Center Postdoctoral (Biochemistry)

Research and Professional Experience

2005-Present	Director, Center for Innovations in Medicine, Biodesign Institute, Professor SOLS, Arizona State University
2007- 2012	Director of the Biological Design PhD Program at The Biodesign Institute, Arizona State University
2006-2009	Member of Biodesign Institute Directorate, Arizona State University
1999-2005	Professor of Microbiology, UTSW
1998-2005	Director, Center for Biomedical Inventions, UTSW
1995-2005	Professor of Internal Medicine, UTSW
1995-2000	Professor of Biochemistry, UTSW
1993-2005	Eugene Tragus Chair in Molecular Cardiology, UTSW
1991/1995	Associate Professor, Internal Medicine and Biochemistry, University of Texas-Southwestern Medical Center
1989-1990	Associate Professor of Biology and Biochemical Engineering, Duke
1989-1990	Duke University (Research Career Development Award)
1984-1989	Assistant Professor of Biology and Biochemical Engineering, Duke University
1982-1983	NIH Postdoctoral Fellow, Department of Biochemistry, The Pennsylvania State University Medical Center (with Dr. James E. Hopper), Research: The isolation and characterization of the *GAL4* regulatory gene of yeast.
1981-1982	Rockefeller Postdoctoral Fellow (with Dr. James E. Hopper)

1975-1981	Graduate Student, Department of Genetics (with Dr. Oliver E. Nelson) and Program in Plant Breeding/Plant Genetics (with Dr. Robert E. Hanneman), University of Wisconsin-Madison. Thesis Title: *The Role and Nature of Genic Balance in Endosperm Development*.

Major Service:

1997-2013	BioChem 20/20 Advisory Committee of Experts (ACE) for Defense Intelligent Agency (Founding member)
2003- 2013	SAB of Western Regional Center of Excellence for Biodefense and Emerging Infectious Diseases
2004- Present	Member, Institute of Medicine Forum on Microbial Threats
2009- 2012	Integration Panel, DoD Breast Cancer Program
2011- Present	Scientific Advisory Council, Beckman Foundation
2018 – Present	Member, National Academy of Inventors

Companies Started::

Eliance. Merged to Macrogenics, Inc.

Synbody Biotechnology Inc. (terminated)

HealthTell, Inc.

Calviri, Inc.

Major Scientific Accomplishments:

EBN 1982: Endosperm Balance Number Hypothesis (*Science*). New concept in how genomes are imprinted to explain interspecific crossing barriers. Widely used now in making new hybrid plants.

GAL 4 1982: Cloning of Gal4 (*PNAS*). First eukaryotic regulator cloned (done by Ray Gestland's lab at same time). Established the regulatory protein has dosage effect (had been argued that they would not). Used dosage effect to argue that Gal4 was poised

on the promoter in the uninduced state (contrary to existing model and now know to be the case).

PDR 1985: Pathogen-derived resistance (PDR) (*J. of Theoretical Biology*, with John Sanford). Proposed that genes of virus could be manipulated to confer resistance in host. The concept was renamed "intracellular immunization" 3 years later by David Baltimore. This technology is now used to make some commercial plants and bacteria stocks resistant to viral infection.

1986-7: C-terminus of Gal4 required for gene activation and interaction with negative regulator, Gal80. (*PNAS, Cell*). The discovery of functional domains in Gal4 was actually done in 1984 while I was in Hoppers lab .

CAP-INDEPENDENT IN VITRO TRANSLATION 1986: With Bill Dougherty developed the use of potyvirus mimic for cap-independent in vitro mammalian translation. This technique is widely used in systems now

FIRST ORGANELLE TRANSFORMATION 1988: Mitochondrial Transformation *(Science*, with John Sanford and Ron Butow). Demonstrated the first transformation of an organelle. This technology is now widely used for mitochondria and chloroplast transformation.

1989 DNA binding specificity of Gal4 zinc-finger is conferred outside of zinc-finger. (*Nature*, also discovered by Chambon group at same time). This was the first definition of how the DNA binding specificity of zinc fingers is conferred.

GENE GUN 1991. Gene gun. (*Technique,* with John Sanford). Development of the helium gene gun. This device is commercially available and widely used for plant transformation and genetic vaccination of animals.

IN VIVO ANIMAL TRANSFORMATION 1991. Direct transformation of tissue in living mice with gene gun. *(PNAS*, with Sandy Williams and John Sanford). This report and the one of Wolff et al were the first of direct transformation of tissues in an animal.

GENE VACCINES 1992. Genetic Immunization *(Nature*). This was first demonstration that introduction of simple plasmids encoding antigens could elicit an immune response. This was revolutionary approach to immunization and vaccines. It is in phase II and III clinical trials and approved for several animal vaccines.

1992. Sug genes affect transcription. (*Nature*). This was the first publication on sequence of Sug1 and its control on transcription and identification as ATPase. First AAA protein.

1993. Structure function studies of Gal4 activation domain. (*Cell*, with Tom Kodadek). This was one of the first indications that ADs are not simply acid amphipathic helices.

TEV PROTEASE 1993. With Bill Dougherty invented the TEV protease system. This protease is now widely used and arguably the best in the field.

1994-1998. Discovery, crystal structure and activities of Bleomycin hydrolase. *(JBC, Science and Cell*, with Lemoor Joshua-Tor). We discovered this cysteine protease and delineated its unusual features including the ability to act as an carboxypeptidase, aminopeptidase and peptide ligase. This work revived work on this protein.

1995. Sug1 directly interacts with the AD of Gal4 and thyroid receptor (*Nature*, with David Moore). This was the demonstration that Sug1 directly interacted with the Gal4 AD and was associated with transcription factors. We later corrected that sug 1 was also in the proteasome. This made most of the field associate transcriptional effects as through the proteolytic effects of the proteasome. The field has turned around on this point after years of uphill battle.

EXPRESSSION LIBRARY IMMUNIZATION 1995. Expression Library Immunization. (*Nature*). This was the demonstration of a technique to unbiasedly test all the genes of a pathogen for their ability to protect against infection. It was the first genomic approach to vaccine discovery. Also the first demonstration of genetic immunization protecting against bacterial infection.

PHAGE PANNING ON CELLS/CELL TARGETING PEPTIDES 1996. Selection of peptide-presenting bacteriophage that bind and transfect mammalian cells *(Nature Medicine*). This was the first demonstration of selection of peptides on cells that targeted uptake. Variations on this approach are widely used now.

CBI 1998. Started Center for Biomedical Inventions (with Tom Kodadek, Skip Garner, Sandy Williams and Bob Meidell). This was the first center of this type. It was dedicated to inventing blue-sky solutions to basic biomedical problems and reducing to practice with highly interdisciplinary approaches.

BioSignature Diagnostics: 1998. Introduced concept biosignature diagnostics (with Shaun Jones, DARPA) with idea of transforming diagnostics to personal normalized signatures. Emphasis on presymptomatic diagnosis.

LINEAR EXPRESSION ELEMENTS 1999. Linear expression elements. *(Nature Biotechnology*, with Kathy Sykes). A new method to functionally test genes and promoters in cells or animals without cloning was demonstrated. Basis for a company and widely used now.

1999. A non-proteolytic requirement for the 19S in nucleotide excision repair. (*Mol. Cell.* with Errol Friedberg). This was the first evidence that the 19S regulatory subunit of the proteasome was required for a cellular function that did not involve proteolysis.

2001. Evidence that the 19S subunit of the proteasome is required for transcriptional elongation. (*Mol. Cell*, with Tom Kodadek). This was the key report to link the proteasome to transcription in a mode other than degradation.

2002. Gal4 recruits a subunit of the proteasome to the promoter on induction. (*Science,* with Tom Kodadek). This report was the first evidence that the proteasome units function independently in vivo and that recruitment of the new APIS complex was an early event in transcription.

HTP ANTIBODY PRODUCTION 2004. High through put antibody production. (*Nature Biotech*) . We created a system for the rapid transition of genome sequence into antibodies against the corresponding protein. Over 3,000 antibodies made and widely used. Commercialized with Abcam.

IN VIVO PATHOGEN MICROARRAYS 2004. Analysis of gene expression in the pathogen during infection. (*PNAS* with Rick Lyons). We developed several techniques that allowed us for the first time to analyze the global gene expression patterns of a pathogen in vivo during the course of infection.

IMMUNOSIGNATURING DIAGNOSTICS: At UTSW first developed the concept of signaturing the antibodies or T-cells to determine the health status of people. At ASU with Phil Stafford developed the peptide array technology to measure immunosignaturing and demonstrated its effectiveness. This technology is licensed to HealthTell, an ASU spinoff.

SYNBODIES: With Chris Diehnelt and Neal Woodbury developed synbodies as a simple method to make small, chemically synthesized antibody like molecules for research, therapeutics and anti-infectives. This technology was licensed to Synbody Biotechnology, an ASU spinoff.

UNIVERSAL PROPHYLACTIC CANCER VACCINE: Created a simple approach to making a potentially universal preventative cancer vaccine. Now a national initiative (Artemis Project) supported by the National Breast Cancer Initiative.

Publications

Shen L, Zhao Zhan-Gong, LainsonJ, BrownJ, SykesK, JohnstonSA, DiehneltC. "Production of high-complexity frameshift neoantigen peptide microarrays". RSC Advances. 11Aug2020. DOI: 10.1039/dOra05267a

Peterson M, Murphy SN, Lainson J, Zhang J, Shen L, Diehnelt CW, Johnston SA. "Cancer-type specific vaccine based on shared frameshift neoantigens effectively treats breast cancer in a murine model". BMC Immunology. 2020 May 5:21 (1):25 doi: 10.1186/s12865-020-00350-3.

Packer, RJ, et al. “Implications of New Understandings of Gliomas in Children and Adults with NF1: Report of a Consensus Conference”. Neuro-Oncology 2020 Jun 9;22(6);773-784 doi: 10.1093/neuonc/noaa036. PMID: 32055852

Shen, L, Zhang J, Lee H, Batista M, Johnston SA. “RNA Transcription and Splicing Errors as a Source of Cancer Frameshift Neoantigens for Vaccines”. Scientific Reports; 2019 Oct 2;PMID: 31578439

Wang L, Stafford P, Johnston SA. “A common antibody response is induced by a wide variety of human pathogens”. (in review). 2018

Zhang J, Shen L, Johnston SA. “Using Frameshift Peptide Arrays for Cancer Neo-Antigens Screening”. Sci Rep. 2018 Nov 26;8(1) PMID: 30478295

Gunther OP, Gardy JL, Stafford P, Fluge O, Melia O, Tang P, Miller RR, Parker SM, Johnston SA, Patrick DM. “Immunosignature Analysis of Myalgic Encephalomyelitis/Chronic Fatigue Synddrome (ME/DFS)”. Mol Neurobiol. 2018 Oct 8. PMID: 30298340

Hansen DT, Craciunescu FM, Fromme P, Johnston SA, Sykes KF. “Generation of High-Spcificity Antibodies against Membrane Proteins Using DNA-Gold Micronanoplexes for Gene Gun Immunization”. Curr Protoc Protein Sci. 2018 Feb 21. PMID: 29516482

Rabinowitz JA, Lainson JC, Johnston SA,Diehnelt CW. “Non-natural amino acid peptide microarrays to discover Ebola virus glycoprotein ligands”, Chem Commun, 2018 Jan. PMID: 29297911

Wang L, Whittemore K, Johnston SA, Stafford P. “Entropy is a Simple Measure of the Antibody Profile and is an Indicator of Health Status: A Proof of Concept”, Sci Rep. 2017 Dec 22. PMID: 29273777

Zhao ZG, Cordovez LA, Johnston SA, Woodbury N. “Peptide Sequencing Directly on Solid Surfaces Using MALDI Mass Spectrometry”. Sci Rep. 2017 Dec. PMID: 29259225

Johnston SA, Domenyuk V, Gupta N, Batista MT, Lainson JC, Zhao ZG, Lusk JF, Loskutov A, Cichacz A, Stafford P, Legutki JB, Diehnelt CW. “A Simple Platform for the Rapid Development of Antimicrobials”. Sci Rep. 2017 Dec. PMID: 29242618

Batista MT, Ferreira EL, Pereira GS, Stafford P, Maeda DLNF, Rodrigues JF, Brady LJ, Johnston SA, Ferreira LCS, Ferreira RCC. “LT adjuvant modulates epitope specificity and improves the efficacy of murine antibodies elicited by sublingual vaccination with the N-terminal domain of Streptococcus mutans P1”. Vaccine. 2017 Dec. PMID: 29146379

Maeda DLNF, Batista MT, Pereira LR, de Jesus Cintra M., Amorim JH, Mathias-Santos C, Pereira SA, Boscardin SB, Silva SDR, Faquim-Mauro EL, Silveira VB, Oliveira DBL, Johnston SA, Ferreira LCS, Rodrigues JF. “Adjuvant-Mediated Epitope Specificity and Enhanced Neutralizing Activity of Antibodies Targeting Dengue Virus Envelope Protein”. Front Immunol. 2017 Sept. PMID: 28993770

Lainson JC, Daly SM, Triplett K, Johnston SA, Hall PR, Diehnelt CW. “Synthetic Antibacterial Peptide Exhibit Synergy with Oxacillin against MRSA”, ACS Med Chem Lett, 2017 Jul 7;8(8);853-857. PMID: 28835801

Gupta N, Lainson J, Belcher P, Shen L, Mason H, Johnson SA, Diehnelt C. "Cross-Reactive Synbody Affinity Ligands Capture Diverse Noroviruses", Analytical Chemistry, 2017 July 5; PMID: 28640636

Singh S, Stafford P, Schlauch KA, Tillett RR, Gollery M, Johnston SA, Khaiboullina SF, De Mierleir KL, Rawat S, Mijatovic T, Subramanian K., Palotas A, Lombardi VC. "Humoral Immunity Profiling of Subjects with Myalgic Encephalomyelitis Using a Random Peptide Microarray Differentiates Cases from Controls with High Specificity and Sensitivity". Mol Neurobiology 2016 Dec 15. PMID: 27981498

Gupta N, Lainson J, Domenyuk V, Zhao ZG, Johnston Sa, Diehnelt CW. "Whole-Virus Screening to Develop Synbodies for the Influenza Virus". Bioconjug Chem. 2016 Oct 19;27(10);2505-2512. Epub 2016 Sep23. PMID: 27658460

Whittemore K, Johnston SA, Sykes K, Shen L. "A General method to Discover Epitopes from Sera", PLoS One 2016 Jun 14;11(6);eCollection 2016, PMID: 27300760

Stafford P, Wrapp D, Johnston SA., "General Assessment of Humoral Activity in Healthy Humans", Mol Cell Proteomics, 2016 May.

Lainson JC, Fuenmayor MF, Johnston SA, Diehnelt CW. "Conjugation Approach to Produce a Staphylococcus aureus Synbody with Activity in Serum". Bioconjug Chem. 2015 Oct 21;epub 2015 Sep14. PMID: 26365100

O'Donnell B., Maurer A., Papandreou-Suppappola A., Stafford P., Johnson SA., "Time-Frequency Analysis of Peptide Microarray Data: Application to Brain Cancer Immunosignatures" Cancer Informatics, in press, 2015

Richer JA, Johnston SA, Stafford P; "Epitope identification from fixed-complexity random-sequence peptides microarrays"; Molecular & Cellular Proteomics; 14.1 (2015); 136-147

Navalkar KA, Johnston SA, Stafford P; "Peptide based diagnostics: "Are random-sequence peptides more useful than tiling proteome sequences?";Journal of Immunological Methods, (2014)

Johnston SA, Thamm DH, Legutki JB. "The immunosignature of canine lymphoma: characterization and diagnostic application". BMC Cancer 2014 Sep 8;14:657. PMID 25199568

Stafford P, Cichacz Z, Woodbury NW, Johnston SA; "Immunosignature system for diagnosis of cancer." *Proceedings of the National Academy of Sciences* 111, no. 30 (2014): E3072-E3080.

Legutki JB, Zhao ZG, Greving M, Woodbury N, Johnston SA, Stafford P: "Scalable High-Density Peptide Arrays for Comprehensive Health Monitoring", Nature Communications. 2014 Sep 3;5:4785, PMID: 25183057

Navalkar K, Magee DM, Cichacz Z, Galgiani J, Woodbury NW, Johnston SA, Woodbury NW, Stafford P: "Application of Immunosignatures to Diagnosis of Valley Fever", Clin Vaccine Immunol. 2014 Aug;21(8): 1169-77,Epub 2014 Jun25 PMID: 24964807.

Stafford P, Cichacz Z, Woodbury N, Johnston SA: "An Immunosignature System for Diagnosis of Cancer", Proc Natl Acad Sci USA, 2014 Jul 29;111(30):E3072-80 Epub 2014July14, PMID: 25024171

Johnston, SA et al., *Antibody Engineering & Therapeutics, The Annual Meeting of the Antibody Society,* Meeting Report. mAbs 6:3, 1-42;May/June 2014, Landes Bioscience

Shen, L., D. Hansen, S.A. Johnston and J.B. Legutki. 2014. *Could immunosignature technology enable the development of a preventative cancer vaccine?* Expert Review of Vaccines. Early online, 1-3 (2014)

Legutki JB, Johnston SA, *Immunosignatures can predict vaccine efficacy,* Proc Natl Acad Sci U S A. 2013 Oct 28. [Epub ahead of print] PMID: 24167296

Domenyuk V, Loskutov A, Johnston SA, Diehnelt CW. (2013) *A Technology for Developing Synbodies with Antibacterial Activity*. PLoS ONE 8(1): e54162. Doi:10.1371/journal.pone.0054162 PMCID: PMC3553175

Restrepo,L. P. Stafford and S.A. Johnston. *Feasibility of an Early Alzheimer's Disease Immunosignature Diagnostic Test.* Journal of Neuroimmunology, 2012 Oct 10

Hughes AK, Cichacz Z, Scheck A, Coons SW, Johnston SA, Stafford P. *Immunosignaturing can detect products from molecular markers in brain cancer.* PLoS One. 2012;7(7):e40201. Epub 2012 Jul 16.PMID:22815729

Kukreja M, Johnston SA, Stafford P. *Comparative study of classification algorithms for immunosignaturing data.* BMC Bioinformatics. 2012 Jun 21;13(1):139. PMID: 22720696

Kroening K, Johnston SA, Legutki JB. *Autoreactive antibodies raised by self derived de novo peptides can identify unrelated antigens on protein microarrays. Are autoantibodies really autoantibodies?* Exp Mol Pathol. 2012 Mar 8;92(3):304-311. [Epub ahead of print] PMID: 22421442

Kukreja M, Johnston SA, Stafford P, *Immunosignaturing Microarrays Distinguish antibody profiles of Related Pancreatic Diseases*, Proteomics & Bioinformatics, 2012, S6,

Stafford P, Halperin R, Legutki JB, Magee DM, Galgiani J, Johnston SA., *Physical Characterization of the 'Immunosignaturing Effect,* Mol Cell Proteomics. 2012 Jan 18. [Epub ahead of print] PMID:22261726

McGuire MJ, Johnston SA, Sykes KF, *Novel immune-modulator identified by a rapid, functional screen of the parapoxvirus ovis (Orf virus) genome*, Proteome Science 2012, 10:4. PMID: 22243932

Chase BA, Johnston SA, Legutki JB, *Evaluation of Biological Sample Preparation for Immunosignature Based Diagnostics*. Clin. Vaccine Immunol*. published ahead of print 11 January 2012 , doi:10.1128/CVI.05667-11*

Halperin RF, Stafford P, Emery JS, Navalkar KA, Johnston SA *GuiTope: an application for mapping random-sequence peptides to protein sequences*. BMC Bioinformatics. 2012 Jan 3;13:1.PMID:22214541

Brown, J., Stafford, P., Johnston, S.A., Dinu, V., (2011). Statistical Methods for Analyzing Immunosignatures, BMC Bioinformatics, 12:349 doi:10.1186/1471-2105-12-349. PMID: 21854615

Gupta, N., Belcher, P., Johnston, SA., Diehnelt, C., (2011) Engineering a Synthetic Ligand for Tumor Necrosis Factor-Alpha. Bioconjugate Chemistry, PMID:21766818

Restrepo, L., P. Stafford, D. Magee and Johnston, SA. (2011) Application of Immunosignatures to the Assessment of Alzheimer's Disease. Annals of Neurology. 70:286-295. .

Halperin R, Stafford P, Johnston SA (2010) Nov 9. Exploring antibody recognition of sequence space through random-sequence peptide microarrays. Molecular & Cellular Proteomics. PMID: 21062935

Greving MP, Belcher PE, Diehnelt CW, Gonzalez-Moa MJ, Emery J, Johnston, SA. (2010) Thermodynamic Additivity of Sequence Variations: An Algorithm for Creating High Affinity Peptides Without Large Libraries or Structural Information. PLoS ONE 5(11): e15432. doi:10.1371/journal.pone.0015432

Diehnelt C, Shah, M, Gupta, N, Belcher, PE, Greving, MP, Stafford, P, Johnston, SA (2010) Discovery of High-Affinity Protein Binding Ligands - Backwards. PLoS One 5(5): e10728. doi:10.1371/journal.pone.0010728. PMID: 20502719

Legutki JB, Magee DM, Stafford P, Johnston SA, A general method for characterization of humoral immunity induced by a vaccine or infection. Vaccine. 2010 Jun 17: 28(28):4529-37. Epub 2010May5. PMID: 20450869

Fu J, Cai K, Johnston SA, Woodbury NW. Exploring peptide space for enzyme modulators. J Am Chem Soc. 2010 May 12;132(18):6419-24. PMID: 20408521

Berea A. R. Williams, Chris W. Diehnelt, Paul Belcher, Matthew Greving, Neal W. Woodbury, Stephen A. Johnston, and John C. Chaput. Creating Protein Affinity Reagents by Combining Peptide Ligands on Synthetic DNA Scaffolds. J.of the American Chemical Society. 10.1021/ja9051735. 6 November 2009.

Boltz KW, Gonzalez-Moa MJ, Stafford P, Johnston SA, Svarovsky SA. 2009. Peptide microarrays for carbohydrate recognition. Analyst. Apr;134(4):650-2.

Morales Betanzos C, Gonzalez-Moa MJ, Boltz KW, Vander Werf BD, Johnston SA, Svarovsky SA. 2009. Bacterial glycoprofiling by using random sequence peptide microarrays. Chembiochem. Mar 23;10(5):877-88.

Betanzos CM, Gonzalez-Moa M, Johnston SA, Svarovsky SA. 2009. Facile labeling of lipoglycans with quantum dots. Biochem Biophys Res Commun. Feb 27;380(1):1-4

Archer, Chase T ; Delahodde, Agnes ; Gonzalez, Fernando ; Johnston, Stephen Albert ; Kodadek, Thomas. 2008. Activation domain-dependent monoubiquitylation of Gal4 protein is essential for promoter binding in vivo. The Journal of biological chemistry. Vol 283. No 18 (2008 May 2) 12614-23

Ferdous, A., O'Neal, M., Nalley, K., Sikder, D., Johnston, S. A. and Kodadek, T. (2008). Phosphorylation and mono-ubiquitination of the Gal4 DNA-binding domain are essential for efficient promoter occupancy. *Mol. Biosys.*, 11, 1116-1125.

Archer, C. T., Burdine, L., Liu, B., Ferdous, A., Johnston, S. A., and Kodadek, T. (2008). Physical and functional interactions of mono-ubiquitylated transactivators with the proteasome. *J. Biol. Chem.,* 283, 21789-21798.

Kumar, P.K., Y. Yu, R. Sternglanz, S. A. Johnston and L. Joshua-Tor. 2008. NADP regulates the yeast *GAL* induction system. Science. 319: 1090-1092

Qu, B., Q. Xiang, L. Li, S.A.Johnston, L.S. Hynan and R. N. Rosenberg. 2007. AB42 Gene vaccine prevents AB42 deposition in brain of double transgenic mice. J. Neurological Sci. 260: 204-213.

Johnston, S.A. 2007. The Potential Importance of Presymptomatic, Host-Based Diagnosis in Biodefence and Standard Health Care. In: Global Infectious Disease Surveillance and Detection. National Academy Press. p193-212.

Talaat AM, Ward SK, Wu CW, Rondon E, Tavano C et al. (2007) Mycobacterial bacilli are metabolically active during chronic tuberculosis in murine lungs: Insights from genome-wide transcriptional profiling. Journal of Bacteriology 189(11): 4265-4274.

Anwarul Ferdous, Devanjan Sikder, Thomas Gillette, Kip Nalley, Thomas Kodadek, and Stephen Albert Johnston. 2007. The role of the proteasomal ATPases and activator monoubiquitylation in regulating Gal4 binding to promoters. Genes & Dev. 21: 112-123. (Published in Advance December 13, 2006, 10.1101/gad.1493207)

Lawson, J. and S.A. Johnston. 2006. Amplification of Sense-Stranded Prokaryotic RNA. DNA Cell Biol. 25:627-634

Lawson JN, Lyons CR, Johnston SA (2006) Expression profiling of Yersinia pestis during mouse pulmonary infection. DNA and Cell Biology 25(11): 608-616

Nalley K, Johnston SA, Kodadek T (2006) Proteolytic turnover of the Gal4 transcription factor is not required for function in vivo. Nature 442(7106): 1054-1057.

Qu, B, P.Boyer, S.A. Johnston, L. Hynan and R. Rosenberg. 2006. Abeta-42 gene vaccination reduces brain amyloid plaque burden in transgenic mice. J. Neurol. Sci. 244: 151-158.

Chen, S. J. Ding, R. Bereredjian, B, Yang, R. Shohet, S. A. Johnston, H. Hohmeier, C. Newgard and P. Grayburn. 2006. Efficient gene delivery to pancreatic islets with ultrasonic microbubble destruction technology. Proc. Natl. Acad. Sci. 103: 8469-8474.

Sulahian R, Johnston SA, Kodadek T (2006) The proteasomal ATPase complex is required for stress-induced transcription in yeast. Nucleic Acids Research 34(5): 1351-1357.

Gillette TG, Yu SR, Zhou Z, Waters R, Johnston SA et al. (2006) Distinct functions of the ubiquitin-proteasome pathway influence nucleotide excision repair. Embo J 25(11): 2529-2538.

Sikder D, Johnston SA, Kodadek T (2006) Widespread, but non-identical, association of proteasomal 19 and 20 S proteins with yeast chromatin. Journal of Biological Chemistry 281(37): 27346-27355.

Samli, Kausar N., McGuire, Michael J., Newgard, Christopher B., Johnston, Stephen Albert, Brown, Kathlynn C. (2005) “Peptide Mediated targeting to the Islets of Langerhans” Diabetes, 54, 2103-2108..

De, Jitakshi, Chang, Ya-Ching, Samli, Kausar N., Schisler, Jonathan, Newgard, Christopher B., Johnston, Stephen Albert, Brown, Kathlynn C., (2005) “Isolation of a Mycoplasma-specific binding peptide from unbiased phage-displayed peptide library” Molecular Biosystems, 1, 149-157.

Magee D.M., Friedberg, RL., Woitaske, M.D., Johnston, S.A., Cox, R.A. Role of B cells in vaccine-induced immunity against coccidioidomycosis. Infect. Immun. 73:7011-7013, 2005.

Solis C.F., Ostoa-Saloma P., Lugo-Martinez V.H., Johnston S.A., Laclette J.P. Related Articles, Links Genetic vaccination against murine cysticercosis by using a plasmid vector carrying Taenia solium paramyosin. Infect Immun. 2005 73: 1895-7.

Belosludtsev Y.Y., Bowerman D., Weil R., Marthandan N., Balog R., Luebke K., Lawson J., Johnston S.A., Lyons C.R., Obrien K., Garner H.R., Powdrill T.F . 2004 Organism Identification Using a Genome Sequence-Independent Universal Microarray Probe Set. Biotechniques 37: 654-8, 660

Qu, Bao-Xi, R. Rosenberg, L. Li, P.J. Boyer and S.A. Johnston. 2004. Genetic vaccination to bias the immune response to amyloid beta peptide as therapy for alzheimers. Archives of Neurobiology. 61: 1859-1864 (Commentary p1832).

Stemke-Hale K, Kaltenboeck B, DeGraves FJ, Sykes KF, Huang J et al. (2005) Screening the whole genome of a pathogen in vivo for individual protective antigens. Vaccine 23(23): 3016-3025.

Belosludtsev,Y.Y., D. Bowerman, Weil, R., N. Marthandan, Balog, R., K. Luebke, Lawson, J., S. A. Johnston, Lyons, C.R., K. O'Brien, Garner, H.R. and T.F. Powdrill. 2004. Organism Identification Using a Genome Sequence-Independent Universal Microarray Probe Set. BioTechniques 2004 Oct; 37(4): 654-8,660.

McGuire, M.J., K.N. Samli, Johnston, S.A., and K.C. Brown. 2004. In vitro Selection of a Peptide with High Selectivity for Cardiomyocytes in vivo. Journal of Molecular Biology**.** 342: 171-182.

McGuire, M.J., K. Sykes, K.N. Samli, L. Timares, M. Barry, K. Stemke-Hale, F. Tagliaferri, M. Logan, K. Jansa, A. Takashima, K. Brown, SA Johnston. 2004. A Library-Selected, Langerhans Cell-Targeting Peptide Enhances an Immune Response. DNA and Cell Biology. 23: 742-752

Gillette, T., Gonzalez, F., Delahodde, A., Johnston, S.A., Kodadek, T. 2004. Physical and Functional Association of RNA Polymerase II and the Proteasome. PNAS. 101(16):5904-5909.

Talaat, A.M., R. Lyons, S. Howard and S.A. Johnston. 2004. The temporal expression profile of Mycobacterium tuberculosis infection in mice.. PNAS. 101(13):4602-7.

Oyama, T, Sykes KF, Samli KN, Minna JD, Johnston SA, Brown KC. 2003. Isolation of lung tumor specific peptides from a random peptide library: generation of diagnostic and cell-targeting reagents. Cancer Letter. 202(2):219-30.

Ivey, D., Magee, D.M., Woitaske, M., Johnston, S.A., R. Cox. 2003. Identification of a protective antigen of *Coccidioides immitis* by expression library immunization. Vaccine. 21:4359-4367.

Chambers, Ross S. and S.A. Johnston. 2003 High-level generation of polyclonal antibodies by genetic immunization. Nature Biotechnology. 21(9):1088-1092

Timares, L., K. M. Safer, B. Qu, A. Takashima and S.A. Johnston. 2003 Drug-inducible, dendritic cell-based genetic immunization. The Journal of Immunology. 170:5483-5490.

Liu, Y.H., K. Luebke, E. Livesay and Stephen Albert Johnston. 2003. A simple method to make a membrane with regions of differential permeability. Journal of Membrane Science. 215:95-101

Rombel, I., A. Talaat and S.A. Johnston. 2003. Shotgun library production in a day. Biotechniques. 34:244-250

Livesay, E. A., Liu, Ying-Horng, Luebke, K.J., Irick, J., Belosludtsev, Y., Rayner, S., Balog, R., and Johnston, S.A. 2002. A scalable high-throughput chemical synthesizer. Genome research. 12:1950-1960

Ferdous, A., Kodadek, T.J. and S.A. Johnston. 2002. A Nonproteolytic Function of the 19S Regulatory Subunit of the 26S Proteasome Is Required For Efficient Activated Transcription by Human RNA Polymerase II. Biochemistry. 41 (42):12798-12805

Sun, L., S.A. Johnston and T.J. Kodadek. 2002. Physical association of the APIS complex and general transcription factors. Biochemical and Biophysical Research Communications 296:991-999

Lakey, D.L., Y. Zhang, A.M. Talaat, B. Samten, L. DesJardin, K.D. Eisenach, S.A. Johnston and P. F. Barnes. 2002. Priming reverse transcription with oligo(dT) does not yield representative samples of *Mycobacterium Tube*rculosis cDNA. Journal in Microbiology 148:2567-2572

Talaat, A., H. Garner, S. Howard, R. Lyons and S.A. Johnston. 2002. Genomic DNA standards for gene expression profiling in Mycobacterium tuberculosis. Nucleic Acids Research 30 (20):1-9.

Johnston, S.A. 2002. Genetic Immunization: What's in a name? Archives of Medical Research 33:325-329.

Gonzalez, F., A. Delahodde, T. Kodadek and S.A. Johnston. 2002. Recruitment of a 19S proteasome subcomplex to an activated promoter. Science 296: 548-550.

Sykes, K., M.G. Lewis, B. Squires and S.A. Johnston. 2002. Evaluation of SIV expression library vaccines in a macaque challenge. Vaccine 20:2382-2395.

Locher,C., K.F. Sykes, D.J. Blackbourne and S.A. Johnston. 2002. Immune response in baboons vaccinated with HIV-2 genetic expression libraries. J. of Med. Primatology. 31:322-329.

Rombel, I., K. F. Sykes, S. Rayner and S.A. Johnston. 2002. ORF-FINDER: a vector for high throughput gene identification. Gene 282:33-41.

Morita A., K. Ariizumil, Ritter III, R., J.V. Jester, Kumamoto T., S.A. Johnston, A. Takashima. 2001. Development of Langerhans cell-targeted gene therapy format using a dendritic cell-specific promoter. Gene Therapy 8:1729-1737.

Talaat, A., R. Lyons and S.A. Johnston. 2001. A combination vaccine confers full protection against co-infection with influenza, herpes simplex and respiratory syncytial viruses. Vaccine 20:538-544.

Russell, S. J., F. Gonzalez, L. Joshua-Tor and S. A. Johnston. 2001. Selective chemical inactivation of AAA proteins reveals distinct functions of proteasomal ATPases. Chemistry and Biology 8:941-950.

Gillette, T., W. Huang, S.J. Russell, S. H. Reed, S.A. Johnston, and E.C. Friedberg. 2001. The 19S complex of the proteasome regulates nucleotide excision repair. Genes & Development. 15:1528-1539

Chang, C., Gonzalez, F., Rothermel, B., Sun, L., Johnston, S.A. and Kodadek, T. (2001) "The Gal4 activation domain binds the Sug2 protein, a proteasome component, in vivo and in vitro" J. Biol. Chem. 276, 30956-30963.

Jeong, C.-J., Yang, S.H., Xie, Y., Zhang, L., Johnston, S.A. and Kodadek, T. (2001) "Evidence That Gal11 Protein Is A Target of the Gal4 Activation Domain In the Mediator" Biochemistry, 40, 9421-9427.

Ferdous, A., F. Gonzalez, L. Sun, T. Kodadek and S.A. Johnston. 2001. The 19S regulatory particle of the proteasome is required for efficient transcription elongation by RNA polymerase II. Molecular Cell. 7: 981-991.

Russell, S. J. and S.A. Johnston. 2001. Evidence that proteolysis of Gal4 can not explain the transcriptional effects of proteasome ATPase mutations. J. Biological Chemistry. 276 (13): 9825-9831.

Li, Q. and S.A. Johnston. 2001. Are all DNA binding and transcriptional regulation by an activator physiologically relevant? Mol. Cell Biol. 21 (7): 2467-2474.

Johnston, S.A., B. Qu, M. McGuire, K.Stemke-Hale, K. Sykes. 2001. Applications of, and Future Challenges for, Genetic Vaccines. Development in Biologicals 2000, 104: 3-8.

Johnston, S.A., A. M. Talaat. 2000. Gene vaccines: origins and implications for the future. Emirates Medical Journal 18 (1): 15-18.

Talaat, A., P. Hunter and S.A. Johnston. 2000. Genome-directed primers for selective labeling of bacterial transcripts for DNA microarray analysis. Nature Biotech. 18:679-682.

Hayashi, S., S.A. Johnston, and A. Takashima. 2000. Induction of Th2-Directed Immune Responses by IL-4-Transduced Dendritic Cells in Mice. Vaccine 18:3097-3105.

Johnston, SA. and R.E. Hanneman. 1999. The nature of the genetic control of Endosperm Balance Number based on aneuploidy analysis of *Datura*. Sex Plant Reprod. 12:71-75.

Russell, S.J., S.H. Reed, W. Huang, E.C Friedberg and S.A. Johnston. 1999. The 19S regulatory complex of the proteasome functions independently of proteolysis in nucleotide excision repair. Mol.Cell 3: 687-695.

Russell, S.J., K.A. Steger and S.A. Johnston, 1999. Sub-cellular localization, stochiometry and protein levels of 26S proteasome subunits in yeast. J. Biol. Chem. 274:21943-21952.

Sykes, K.A. and S.A. Johnston. 1999. Genetic-live vaccines mimic the antigenicity but not pathogenicity of live viruses. DNA, Cell Biology 18: 521-531.

O'Farrell, P., F. Gonzalez, W. Zheng, S.A. Johnston and L. Joshua-Tor. 1999. Crystal structure of human bleomycin hydrolase, a self-compartmentalizing cysteine protease Structure 7: 619-27.

Sykes, K. and S.A. Johnston. 1999. Linear Expression Elements: a rapid, in vivo method to screen for gene functions. Nature-Biotech. 17: 355-359.

Timares, L., A. Takashima and S.A. Johnston, 1998. Quantitative analysis of the immunopotentcy of genetically transfected dendritic cells. Proc.Nat.Acad.Sci. 22: 13147-13152.

Joshua-Tor, L. and S. A. Johnston. 1998. Bleomycin Hydrolase. In: The Proteases. 634-638.

Zheng, W. and S.A. Johnston. 1998. The nucleic acid binding activity of bleomycin hydrolase is involved in bleomycin detoxification. Mol. Cell Biol. 18: 3580-3585.

Corton, J.C., E. Moreno and S.A. Johnston. 1998. Alterations in the Gal4 DNA binding domain can affect transcriptional activation independent of DNA binding. J. Biol. Chem.273:13776-13780

Zheng, W., S. A. Johnston and L. Joshua-Tor. 1998. The unusual active site of Gal6/bleomycin hydrolase can act as a carboxypeptidase, aminopeptidase and peptide ligase. Cell 93: 103-110.

Vashee, S., K. Melcher, W. Ding, S.A. Johnston and T. Kodadek. 1998. Two novel mechanisms for cooperative binding of transcription factors to promoters in vivo. Curr. Biol. 8: 452-458.

Tanelian, D., M. Barry, S. A. Johnston, T. Le and G. Smith. 1997. Semaforin III can repulse and inhibit adult sensory afferents in vivo. Nature Medicine 3: 1398-1401.

Tanelian, D.E., M.A. Barry, S. A. Johnston, T. Le and G. Smith. 1997. Controlled gene gun delivery and expression of DNA within the cornea. Biotechniques 23:484-488.

Zheng, W., H.E. Xu, and S. A. Johnston. 1997. The cysteine-protease bleomycin hydrolase is a component of the galactose regulon in yeast. J. Biol. Chem. 272:30350-30355.

Sun, D., J.C. Swaffield, S.A. Johnston, C. E. Milligan, T. Zoeller and L.M. Schwartz. 1997. Identification of a phylogeneticallly conserved Sug1 CAD family member that is differentially experessed in the mouse nervous system. J. Neurobiology 33:877-900.

Barry, M. A. and S. A. Johnston. 1997. Biological features of genetic immunization. Vaccine15: 788-791.

Barry, M. A. and S. A. Johnston. 1997. Genetic to genomic vaccination. Vaccine 15: 808-809.

Ding, W.V. and S.A. Johnston. 1997. The DNA-binding and activation domains of GAL4p are sufficient for conveying its regulatory signals. Mol. Cell Biol. 17: 2538-2549.

Russell, S. J., U. G. Sathayanarayana and S. A. Johnston. 1996. Isolation and characterization of Sug2: a novel ATPase family component of the yeast 26S proteasome. J. Biol. Chem. 271: 32810-32817.

Fancy, D., K. Melcher, S.A. Johnston and T. Kodadek. 1996. New chemistry for the study of multiprotein complexes: the six histidine tag as a receptor for a protein cross-linking reagent Chem. & Biol 3:551-559.

Bauer, V. W., J. C. Swaffield, S. A. Johnston and M. T. Andrews. 1996. CAD 44: a novel regulatory sub-unit fo the 26S proteasome and the mammalian homolog of yeast Sug2p. Gene 181: 63-69.

Suzuki-Fujimoto, T., M. Fukuma, K. Yano H. Sakurai, A. Vonica, S.A. Johnston and T. Fukasawa. 1996. Analysis of the galactose signal transduction pathway in yeast: interaction between Gal3p and Gal80p. Mol. Cell Biol. 16: 2504-2508.

Barry, M.A., W. Dower and S.A. Johnston. 1996. Selection of peptide-presenting bacteriophage that bind and transfect mammalian cells. Nature Medicine 2:299-305.

Sun, D., U. Sathyanarayana, S.A. Johnston and L. M. Schwartz. 1996. A member of the phylogenetically conserved CAD family of transcriptional regulators is dramatically up-regulated during the programmed cell death of skeletal muscle in the tobacco hawkmoth *Manduca sexta*. Developmental Biology. 173: 499-509.

Johnston, S.A. and R.E. Hanneman. 1996. Genetic control of endosperm balance number (EBN) in the Solanaceae based on trisomic and mutation analysis. Genome. 39:314-321.

Swaffield, J. C., K. Melcher and S. A. Johnston. 1996. A highly conserved ATPase protein as a mediator between acidic activation domains and the TATA-binding protein. Nature (Correction). 370: 658.

Barry, M.A., W.C. Lai and S.A. Johnston. 1995. Protection against *Mycoplasma* infection using expression library immunization. Nature 377: 632-635.

Lai, W.C., M. Bennett, S.A. Johnston, M.A. Barry and S.P. Pakes. 1995. Protection against Mycoplasma pulmonis infection by genetic vaccination. DNA and Cell Biol. 14: 643-651.

Joshua-Tor, L., H.E. Xu, S.A. Johnston and D.C. Rees. 1995. The crystal structure of Gal6/bleomycin hydrolase- a conserved protease that binds DNA. Science. 269:945-950.

Xu, H.E., T. Kodadek and S.A. Johnston. 1995. A single GAL4 dimer can maximally activate transcription under physiological conditions. Proc. Natl. Acad. Sci. 92: 7677-7680.

Kodadek, T. and S.A. Johnston. 1995. The dangers of dicing and splicing: the use of chimeric proteins in transcriptional studies. Chem. and Biol. 2: 187-194

Melcher, K. and S.A. Johnston. 1995. GAL4 interacts with TBP and coactivators. Mol. Cell Bio. 15: 2839-2848.

Johnston, S.A. and R.E.Hanneman. 1995. The genetics of triploid formation and its relationship to endosperm balance number (EBN). Genome 38: 60-67.

Swaffield, J.C., K. Melcher and S.A. Johnston. 1995. A highly conserved ATPase protein as a mediator between acidic activation domains and the TATA-binding protein Nature 374: 88-91.

Lee, J., F. Ryan, J. Swaffield, SA. Johnston and D.D. Moore. 1995. Thyroid hormone and retinoid X receptors interact directly with a highly conserved transcriptional mediator Nature 374: 91-94.

Xu, H.E. and S.A. Johnston. 1994. Yeast bleomycin hydrolase is a DNA-binding cysteine protease. J. Biol. Chem. 269:21177-21183.

Barry, M.E., M. A. Barry and S.A. Johnston. 1994. Production of monoclonal antibodies by genetic immunization. BioTech. 16: 616-620.

Tang, D., S. A. Johnston and D. P. Carbone. 1994. Butyrate-inducible and tumor-restricted gene expression by adenovirus vectors. Cancer Gene Therapy 1: 15-21.

Parks, T.D., K.K. Leuther, E.D. Howard, S.A. Johnston and W.G. Dougherty. 1994. Release of proteins and peptides from fusion proteins using a recombinant plant virus proteinase. Anal. Biochem. 216: 413-417.

Vashee, S., H. Xu, S. A. Johnston, and T. Kodadek. 1993. How do Zn_2Cys_6 proteins distinguish between similar upstream acitvation sites? Comparison of the DNA-binding specificity of the GAL4 protein in vitro and in vivo. J. Biol. Chem. 268: 24699-24706.

Toffaletti, D.L., T.H. Rude, S.A. Johnston, D.T. Durack and J.R. Perfect. 1993. Gene transfer in *Cryptococcus neoformans* by use of biolistic delivery of DNA. J.Bacteriol. 175:1405-1411.

Van Hoy, M., K.K. Leuther, T. Kodadek and S.A. Johnston. 1993. The acidic domains of the GCN4 and GAL4 proteins are not a-helical, but form □-sheets. Cell 72:587-594.

Leuther, K., J. M. Salmeron and S. A. Johnston. 1993. Genetic evidence that an activation of GAL4 does not require acidity and may form a □-sheet. Cell 72:575-586.

Perfect,J.R., T.H. Rude, L.M. Penning and S.A. Johnston. 1992. Cloning the *Cryptococcus neoformans* TRP1 gene by complenentation in *Saccharomyces cerevisiae*. Gene 122:213-217.

Leuther,K and S.A. Johnston. 1992 Nondissociation of GAL4 and GAL80 in vivo after galactose induction. Science 256:1333-1335.

Swaffield, J.C., J.F. Bromberg and S.A. Johnston. 1992 Alterations in SUG1, a yeast protein resembling the HIV-TAT-Binding protein, relieve the requirement for an acidic activation domain in GAL4. Nature . 357:698-700.

Tang, D., M. DeVit and S. A. Johnston. 1992. Genetic immunization is a simple method for eliciting an immune response. Nature . 356:152-154.

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.

Williams, R.S., S.A. Johnston, M. Riedy, M.J. Devit, S.G. McElligott and J.C. Sanford. 1991. Introduction of foreign genes into tissues of living mice by DNA - coated microprojectiles. Proc. Natl. Acad Sci. (USA). 88:2726-2730.

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

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

Salmeron, J.M.Jr., K. Leuther, and S.A. Johnston. 1990. GAL4 mutations that separate the transcriptional activation and GAL80-interactive functions of GAL4 protein. Genetics 125:21-27.

Corton, J.C. and S.A. Johnston. 1989. Altering the DNA binding specificity of GAL4 requires sequences adjacent to the zinc finger. Nature 340: 724-727.

Salmeron, J.M. Jr., S.D. Langdon and S.A. Johnston. 1989. Interaction between the transcriptional activator LAC9 and the negative regulatory protein GAL80. Mol. Cell Biol. 9:2950-2956.

Frankel, A., P. Welsh, A. Hertler, D. Schlossman, D. Withers, and S.A. Johnston. 1989. Selection and characterization of mutants of ricin toxin a chain in Saccharomyces cerevisiae. Mol. Cell. Biol. 9:415-420.

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.

Johnston, S.A., J.M. Salmeron, Jr., and S.S. Dincher. 1987. Inter-action of positive and negative regulatory proteins in the galactose regulon of yeast. Cell 50:143-146.

Baker, S.M., S.A. Johnston, J.E. Hopper, and J.A. Jaehning. 1987. Transcription of multiple copies of the yeast GAL7 gene is limited by specific factors in addition to GAL4. Mol.Gen. Genet. 208:127-134.

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

Riley, M.I.,J.E. Hopper, S.A. Johnston, and R.C. Dickson. 1987. GAL4 of *Saccharomyces cerevisiae* activates the lactose-galactose regulon of

Kluyveromyces lactis and creates a new phenotype: glucose repression of the regulon. Mol. Cell. Biol. 7:780-786.

Salmeron, J.M. and S.A. Johnston. 1986. Analysis of the *Kluyveromyces lactis* positive regulatory gene LAC9 reveals functional homology to, but sequence divergence from, the *Saccharomyces cerevisia* GAL4 gene. Nucl. Acids Res. 14:7767-7781.

Johnston, S.A., M.J. Zavortink, C. Debouck, and J.E. Hopper. 1986. Functional domains of the yeast regulatory protein GAL4. Proc. Natl. Acad. Sci. (USA) 83:6553-6557.

Johnston, S.A. , R.W. Ruhde, M.K. Ehlenfeldt, and R.E. Hanneman. 1986. Inheritance and microsporogenesis of a synaptic mutant (sy-2) from *Solanum commersonii* Dun. Can. J.Genet. Cytol. 28:520-524.

Sanford, J.C. and S.A. Johnston. 1985. The concept of parasite-derived resistance--deriving resistance genes from the parasite's own genome. J. Theor. Biol. 113:395-405.

Johnston, S.A. and J.E. Hopper. 1982. Isolation of the yeast regulatory gene, GAL4 and analysis of its dosage effects on the galactose/melibiose regulon. Proc. Natl. Acad. Sci. (USA) 79:6971-6975.

Johnston, S.A. and R.E. Hanneman. 1982. Manipulations of endosperm balance number overcome crossing barriers between diploid *Solanum* species. Science 217:446-448.

Johnston, S.A., T.P.M. den Nijs, S.J. Peloquin, and R.E. Hanneman. 1980. The significance of genic balance to endosperm development in interspecific crosses. Theor. Appl. Genet. 57:5-9.

Johnston, S.A. and R.E. Hanneman. 1980. Support of the endosperm balance number hypothesis utilizing some tuber-bearing *Solanum* species Am. Pot. J. 57:7-14.

Patents and Licenses (selected of ~50)

1. Linear and circular expression elements. Patents and Licensed (S.A.Johnston/K. Sykes, co-inventors)
2. Rationally designed and chemically synthesized promoter for genetic vaccine and gene therapy (B. Qu, co-inventor) (pending)
3. Methods and compositions for vaccination comprising nucleic acid and/or polypeptide sequences of the genus Borrelia (Lyme Disease) (K. Sykes, K. Stemke-Hale, co-inventors) (filed)
4. Use of Parapox B2L Protein to Modify Immune Responses to Administered Antigens (M. McGuire, co-inventor) (patented)
5. Methods and compositions for vaccination comprising nucleic acid and/or polypeptide sequences of chlamydia. (filed)
6. Methods and compositions for vaccination comprising nucleic acid and/or polypeptide sequences of chlamydia psittaci. (K. Sykes, K. Stemke-Hale and B. Kaltenboeck co-inventors) (filed)
7. Methods for vaccine identification and compositions for vaccination comprising nucleic acid and/or polypeptide sequences of the herpesvirus family. (filed)

8. Methods for rapid and efficient protein-crosslinking. (T. Kodadek and D. Fancy, co-inventors) (patented)
9. A new high throughput DNA synthesizer based on masks. (E. Livesay and S. Liu, co-inventors) (pending)
10. Expression library immunization. (W. Lai and M. Barry, co-inventors) (patented & licensed)
11. A simple system for purifying authentic proteins and peptides(William Dougherty, co-inventor) (patented & licensed)
12. Genetic immunization as a simple and improved method for eliciting an immune response (John Sanford, co-inventor) (pending & licensed)
13. An improved biolistic device (J. Sanford and M. Devit, co-inventors) (patented & licensed). This is for the helium device sold by BioRad.
14. A method for isolating protease encoding genes. (Bruce Kohorn, co-inventor) (licensed)
15. Parasite-derived resistance (John Sanford, co-inventor) (patented)
16. Amyloid β Gene Vaccines (Roger Rosenberg and Bao-Xi Qu, co-inventors)(patented)
17. Particle-mediated transformation of vertebrate tissue cells (John Sanford, co-inventor) (patented)
18. Use of parapox PP30 protein to modify immune responses to administered antigens (patented)
19. Nucleic acid and polypeptide sequences useful as adjuvants (patented)
20. Particle-mediated bombardment of DNA sequences into tissue to induce an immune response (patented)
21. E. coli resistance to Qβ virus infection (patented)
22. Method and apparatus for introducing biological substances into living cells (patented)
23. Methods and Compositions for Vaccination Comprising Nucleic Sequences of *Chlamydia psittaci*. U.S. Patent application: No. 09/738,269. PCT application: No. 10/023,437 US patent Issued 2010.Inventors: B. Kaltenboeck, K. Sykes, K. Stemke-Hale, S. Johnston
24. Methods and Compositions for Vaccination Comprising Nucleic Acid and/or Polypeptide Sequences of *Chlamydia.* US Patent No. 8,298,542 B2. Date of patent: Oct. 30, 2012. Inventors: S. Johnston, K. Stemke-Hale, K. Sykes, B. Kaltenboeck.
25. Immobilizing an Entity in a Desired Orientation on a Support Material. US Patent No. 8,481,679 B2. Date of patent July 9, 2013. Inventors: SA Johnston, CW Diehnelt.
26. Peptide array quality control. US Patent No. 10006919. Date of Patent: June 26, 2018. Inventors: Neal Woodbury, SA Johnston, Phillip Stafford.
27. Systems and methods of epitope binning and antibody profiling. US Patent No. 10,900,975. Date of Patent: January 26, 2021. Inventors: Stephen Albert Johnston.
28. Peptide array quality control. US Patent No. 11,067,582. Date of Patent: July 20, 2021. Inventors: Neal Woodbury, Stephen Albert Johnston, Phillip Stafford.