Stanford

Ronald W. Davis

Professor of Biochemistry and of Genetics

CONTACT INFORMATION

- **Alternate Contact**

  Katrina Hong - Chief of Staff

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Bio

ACADEMIC APPOINTMENTS

- Professor, Biochemistry
- Professor, Genetics
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute

HONORS AND AWARDS

- EMBO, European Lectureship (1976)
- Teacher-Scholar Grant, Dreyfus (1976)
- Young Faculty Research Award, Society of the Sigma Xi (1976)
- Award in Microbiology and Immunology, Eli Lilly and Co. (1976)
- Chaired, Nucleic Acid Gordon Conference (1980)
- Recipient of, United States Steel Award (1981)
- Elected to the, National Academy of Sciences-Genetics (1983)
- Distinguished Alumni Award, Eastern Illinois University (1984)
- Louis S. Rosentiel Award for, Distinguished Work in Basic Medical Research (1992)
- Biotechnology Research Award, Chiron Corporation (1998)
- Genetics Society of America Award, Genetics Society of America (1998)
- Senior Scholar Award in Global Infectious Disease, Ellison Medical Foundation (2002)
- Herbert A. Sober Award, ASBMB/IUBMB (2004)
- Lifetime Achievement Award, Genetics Society of America (2004)
- Recipient of, Dickson Prize in Medicine, University of Pittsburgh (2005-2004)
- Distinguished Alumni Award, California Institute of Technology (2007)
- Inventor of the Year, SVIPLA (2011)

- Gruber Genetics Prize, Gruber Foundation (2011)
- Warren Alpert Foundation Prize, Warren Alpert Foundation (2013)
- Named among the top 7 of "Today's Greatest Inventors", Atlantic Magazine (2013)

LINKS

- Genome Technology Center: http://med.stanford.edu/sgtc/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

We are using Saccharomyces cerevisiae and Human to conduct whole genome analysis projects. The yeast genome sequence has approximately 6,000 genes. We have made a set of haploid and diploid strains (21,000) containing a complete deletion of each gene. In order to facilitate whole genome analysis each deletion is molecularly tagged with a unique 20-mer DNA sequence. This sequence acts as a molecular bar code and makes it easy to identify the presence of each deletion. The mixture of all such tag strains then allows for the analysis of the entire genome with the manipulation of a single culture. During growth under a variety of conditions the loss of a tag indicates the loss of a deletion from the population. The concentration of each tag is determined by PCR amplification of the tags and hybridization to an Affymetrix DNA chip that contains the complement to all of the DNA sequence tags. This approach is being applied to other microorganisms.

We have identified a number of wild isolates of yeast that grow at much higher temperatures than is typical for Saccharomyces cerevisiae and are pathogenic and can kill a mouse. Microarrays have been used to map complex genetic traits such as virulence traits in pathogenic Saccharomyces cerevisiae using hybridization to detect single nucleotide polymorphisms. We have developed a new technology termed Reciprocal Hemizygosity Scanning that allows the determination of the contribution to the phenotype of all pair wise alleles for the whole genome from 2 independent strains. Using this technology we can map and quantitate all of the alleles in the genome for any complex quantitative trait in a single tube assay. These technologies will allow us to explore allelic contributions in complex mixed culture real environments and to investigate ecology at the genome level.

We are conducting a whole genome analysis (transcriptome and proteome) from blood of Human trauma patients. In this large clinical study we are establishing the standards for clinical genomics. We have developed 2 new technologies, "Molecular Inversion Probes" (MIP) for massive multiplex analysis of SNP and DNA content in Human and, "Mismatch Repair Detection" for discovery of rare Human polymorphisms. Both technologies are being applied to numerous clinical investigations.

Teaching

STANFORD ADVISEES

Doctoral Dissertation Advisor (AC)

Bianca Edozie

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biochemistry (PhD Program)
- Biomedical Data Science (PhD Program)
- Genetics (PhD Program)
- Immunology (PhD Program)

Publications

PUBLICATIONS

- **Community members in activated sludge as determined by molecular probe technology.** *Water research*
  Xu, W., Brand, V. R., Suresh, S., Jensen, M. A., Davis, R. W., Criddle, C. S., St Onge, R. P., Hyman, R. W.
  2019; 168: 115104

- **The IDO Metabolic Trap Hypothesis for the Etiology of ME/CFS.** *Diagnostics (Basel, Switzerland)*
  Kashi, A. A., Davis, R. W., Phair, R. D.
  2019; 9 (3)

- **Combining newborn metabolic and DNA analysis for second-tier testing of methylmalonic acidemia** *GENETICS IN MEDICINE*
  Peng, G., Shen, P., Gandotra, N., Le, A., Fung, E., Jelliffe-Pawlowski, L., Davis, R. W., Enns, G. M., Zhao, H., Cowan, T. M., Scharfe, C.
  2019; 21 (4): 896–903

- **Red blood cell deformability is diminished in patients with Chronic Fatigue Syndrome** *CLINICAL HEMORHEOLOGY AND MICROCIRCULATION*
  Saha, A. K., Schmidt, B. R., Wilhelmy, J., Vy Nguyen, Abugherir, A., Do, J. K., Nemat-Gorgani, M., Davis, R. W., Ramasubramanian, A. K.
  2019; 71 (1): 113–16

- **Red blood cell deformability is diminished in patients with Chronic Fatigue Syndrome.** *Clinical hemorheology and microcirculation*
  Saha, K. A., Schmidt, R. B., Wilhelmy, J., Nguyen, V., Abugherir, A., Do, K. J., Nemat-Gorgani, M., Davis, W. R., Ramasubramanian, K. A.
  2018

- **A biosensor-based approach reveals links between efflux pump expression and cell cycle regulation in pleiotropic drug resistance of yeast.** *The Journal of biological chemistry*
  Li, J., Kolberg, K., Schlecht, U., St Onge, R. P., Aparicio, A. M., Horecka, J., Davis, R. W., Hillenmeyer, M. E., Harvey, C. J.
  2018

- **Erythrocyte Deformability As a Potential Biomarker for Chronic Fatigue Syndrome**
  Saha, A. K., Schmidt, B. R., Wilhelmy, J., Vy Nguyen, Do, J., Suja, V. C., Nemat-Gorgani, M., Ramasubramanian, A. K., Davis, R. W.
  AMER SOC HEMATOLOGY.2018

- **Multiplexed precision genome editing with trackable genomic barcodes in yeast.** *Nature biotechnology*
  Roy, K. R., Smith, J. D., Vonesch, S. C., Lin, G., Tu, C. S., Lederer, A. R., Chu, A., Suresh, S., Nguyen, M., Horecka, J., Tripathi, A., Burnett, W. T., Morgan, et al
  2018

- **HEx: A heterologous expression platform for the discovery of fungal natural products** *SCIENCE ADVANCES*
  Harvey, C. J. B., Tang, M., Schlecht, U., Horecka, J., Fischer, C. R., Lin, H., Li, J., Naughton, B., Cherry, J., Miranda, M., Li, Y., Chu, A. M., Hennessy, et al
  2018; 4 (4): eaar5459

- **Template-Independent Enzymatic Oligonucleotide Synthesis (TiEOS): Its History, Prospects, and Challenges** *BIOCHEMISTRY*
  Jensen, M. A., Davis, R. W.
  2018; 57 (12): 1821–32

- **Streamlined circular proximity ligation assay provides high stringency and compatibility with low-affinity antibodies** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Jalili, R., Horecka, J., Swartz, J. R., Davis, R. W., Persson, H. H. J.
  2018; 115 (5): E925–E933

- **Transplant Virus Detection Using Multiplex Targeted Sequencing.** *The journal of applied laboratory medicine*
  Tan, S. K., Shen, P. n., Lefterova, M. I., Sahoo, M. K., Fung, E. n., Odegaard, J. I., Davis, R. W., Pinsky, B. A., Scharfe, C. n.
  2018; 2 (5): 757–69

- **Quantitative analysis of protein interaction network dynamics in yeast** *MOLECULAR SYSTEMS BIOLOGY*
  Celaj, A., Schlecht, U., Smith, J. D., Xu, W., Suresh, S., Miranda, M., Aparicio, A., Proctor, M., Davis, R. W., Roth, F. P., St. Onge, R. P.
  2017; 13 (7): 934

- **RecJ 5 ' Exonuclease Digestion of Oligonucleotide Failure Strands: A "Green" Method of Trityl-On Purification** *BIOCHEMISTRY*
  Jensen, M., Davis, R.
  2017; 56 (18): 2417-2424

- **Autonomous sweat extraction and analysis applied to cystic fibrosis and glucose monitoring using a fully integrated wearable platform** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Emaminejad, S., Gao, W., Wu, E., Davies, Z. A., Nyein, H. Y., Challa, S., Ryan, S. P., Fahad, H. M., Chen, K., Shahpar, Z., Talebi, S., Milla, C., Javey, et al
  2017; 114 (18): 4625-4630

- **Heterologous expression of diverse propionyl-CoA carboxylases affects polyketide production in Escherichia coli.** *journal of antibiotics*
  Vandova, G. A., O'Brien, R. V., Lowry, B., Robbins, T. F., Fischer, C. R., Davis, R. W., Khosla, C., Harvey, C. J., Hillenmeyer, M. E.
  2017

- **Bio-based products: Synthetic biology approaches to engineer production of biofuels & value-added chemicals**
  Harvey, C., Teng, M., Horecka, J., Schlecht, U., Fischer, C., Miranda, M., Cherry, J., Davis, R., St Onge, R., Tang, Y., Hillenmeyer, M.
  AMER CHEMICAL SOC.2017

- **Multifunctional, inexpensive, and reusable nanoparticle-printed biochip for cell manipulation and diagnosis.** *Proceedings of the National Academy of Sciences of the United States of America*
  Esfandyarpour, R., DiDonato, M. J., Yang, Y., Durmus, N. G., Harris, J. S., Davis, R. W.
  2017; 114 (8): E1306-E1315

- **A method for high-throughput production of sequence-verified DNA libraries and strain collections.** *Molecular systems biology*
  Smith, J. D., Schlecht, U., Xu, W., Suresh, S., Horecka, J., Proctor, M. J., Aiyar, R. S., Bennett, R. A., Chu, A., Li, Y. F., Roy, K., Davis, R. W., Steinmetz, et al
  2017; 13 (2): 913-?

- **A FULLY INTEGRATED ELECTRONIC PLATFORM FOR MULTIPLEXED INTERMOLECULAR FORCE SPECTROSCOPY**
  Challa, S., Talebi, S., Davis, R. W., Javanmard, M., Emaminejad, S., IEEE
  IEEE.2017: 1652–55

- **A Wearable Electrochemical Platform for Noninvasive Simultaneous Monitoring of Ca(2+) and pH.** *ACS nano*
  Nyein, H. Y., Gao, W., Shahpar, Z., Emaminejad, S., Challa, S., Chen, K., Fahad, H. M., Tai, L., Ota, H., Davis, R. W., Javey, A.
  2016; 10 (7): 7216-7224

- **Nucleotide-Specific Contrast for DNA Sequencing by Electron Spectroscopy** *PLOS ONE*
  Mankos, M., Persson, H. H. J., N'Diaye, A. T., Shadman, K., Schmid, A. K., Davis, R. W.
  2016; 11 (5): e0154707

- **Fully-integrated wearable sensor array for multiplexed perspiration analysis**
  Gao, W., Emaminejad, S., Nyein, H., Challa, S., Davis, R., Javey, A.
  AMER CHEMICAL SOC.2016

- **Next-Generation Molecular Testing of Newborn Dried Blood Spots for Cystic Fibrosis.** *journal of molecular diagnostics*
  Lefterova, M. I., Shen, P., Odegaard, J. I., Fung, E., Chiang, T., Peng, G., Davis, R. W., Wang, W., Kharrazi, M., Schrijver, I., Scharfe, C.
  2016; 18 (2): 267-282

- **Integrating Cell Phone Imaging with Magnetic Levitation (i-LEV) for Label-Free Blood Analysis at the Point-of-Living.** *Small*
  Baday, M., Calamak, S., Durmus, N. G., Davis, R. W., Steinmetz, L. M., Demirci, U.
  2016; 12 (9): 1222-1229

- **Nanoelectronic three-dimensional (3D) nanotip sensing array for real-time, sensitive, label-free sequence specific detection of nucleic acids.** *Biomedical microdevices*
  Esfandyarpour, R., Yang, L., Koochak, Z., Harris, J. S., Davis, R. W.
  2016; 18 (1): 7-?

- **Fully integrated wearable sensor arrays for multiplexed in situ perspiration analysis** *NATURE*
  Gao, W., Emaminejad, S., Nyein, H. Y., Challa, S., Chen, K., Peck, A., Fahad, H. M., Ota, H., Shiraki, H., Kiriya, D., Lien, D., Brooks, G. A., Davis, et al

2016; 529 (7587): 509-?

- **Quantitative CRISPR interference screens in yeast identify chemical-genetic interactions and new rules for guide RNA design.** *Genome biology*
  Smith, J. D., Suresh, S., Schlecht, U., Wu, M., Wagih, O., Peltz, G., Davis, R. W., Steinmetz, L. M., Parts, L., St Onge, R. P.
  2016; 17 (1): 45-?

- **Identification of Chemical-Genetic Interactions via Parallel Analysis of Barcoded Yeast Strains.** *Cold Spring Harbor protocols*
  Suresh, S., Schlecht, U., Xu, W., Miranda, M., Davis, R. W., Nislow, C., Giaever, G., St Onge, R. P.
  2016; 2016 (9): pdb prot088054-?

- **Systematic Mapping of Chemical-Genetic Interactions in Saccharomyces cerevisiae.** *Cold Spring Harbor protocols*
  Suresh, S., Schlecht, U., Xu, W., Bray, W., Miranda, M., Davis, R. W., Nislow, C., Giaever, G., Lokey, R. S., St Onge, R. P.
  2016; 2016 (9): pdb top077701-?

- **Ndt80 activates the meiotic ORC1 transcript isoform and SMA2 via a bi-directional middle sporulation element in Saccharomyces cerevisiae** *RNA BIOLOGY*
  Xie, B., Horecka, J., Chu, A., Davis, R. W., Becker, E., Primig, M.
  2016; 13 (9): 772-782

- **A Rapid, High-Quality, Cost-Effective, Comprehensive and Expandable Targeted Next-Generation Sequencing Assay for Inherited Heart Diseases.** *Circulation research*
  Wilson, K. D., Shen, P., Fung, E., Karakikes, I., Zhang, A., Inanloorahatloo, K., Odegaard, J., Sallam, K., Davis, R. W., Lui, G. K., Ashley, E. A., Scharfe, C., Wu, et al
  2015; 117 (7): 603-611

- **Magnetic levitation of single cells.** *Proceedings of the National Academy of Sciences of the United States of America*
  Durmus, N. G., Tekin, H. C., Guven, S., Sridhar, K., Arslan Yildiz, A., Calibasi, G., Ghiran, I., Davis, R. W., Steinmetz, L. M., Demirci, U.
  2015; 112 (28): E3661-8

- **Magnetic levitation of single cells.** *Proceedings of the National Academy of Sciences of the United States of America*
  Durmus, N. G., Tekin, H. C., Guven, S., Sridhar, K., Arslan Yildiz, A., Calibasi, G., Ghiran, I., Davis, R. W., Steinmetz, L. M., Demirci, U.
  2015; 112 (28): E3661-8

- **Robust Optimization of Biological Protocols.** *Technometrics : a journal of statistics for the physical, chemical, and engineering sciences*
  Flaherty, P., Davis, R. W.
  2015; 57 (2): 234-244

- **RASA: Robust Alternative Splicing Analysis for Human Transcriptome Arrays** *SCIENTIFIC REPORTS*
  Seok, J., Xu, W., Davis, R. W., Xiao, W.
  2015; 5

- **Multielectrode Sensing for Extraction of Signal From Noise in Impedance Cytometry** *IEEE SENSORS JOURNAL*
  Emaminejad, S., Talebi, S., Davis, R. W., Javanmard, M.
  2015; 15 (5): 2715-2716

- **A Hybrid Approach of Gene Sets and Single Genes for the Prediction of Survival Risks with Gene Expression Data** *PLOS ONE*
  Seok, J., Davis, R. W., Xiao, W.
  2015; 10 (5)

- **Integrated RNA- and protein profiling of fermentation and respiration in diploid budding yeast provides insight into nutrient control of cell growth and development.** *Journal of proteomics*
  Becker, E., Liu, Y., Lardenois, A., Walther, T., Horecka, J., Stuparevic, I., Law, M. J., Lavigne, R., Evrard, B., Demougin, P., Riffle, M., Strich, R., Davis, et al
  2015; 119: 30-44

- **Robust Optimization of Biological Protocols** *TECHNOMETRICS*
  Flaherty, P., Davis, R. W.
  2015; 57 (2): 234-244

- **EXTENDED COVERAGE BY NEXT GENERATION SEQUENCING METHODS REFINES THE CHARACTERIZATION OF THE COMMON AND WELL DOCUMENTED HLA ALLELES**

Fernandez-Vina, M. A., Wang, C., Krishnakumar, S., Levinson, D. F., Davis, R. W., Mindrinos, M.
ELSEVIER SCIENCE INC.2015: 226

- **Tunable control of antibody immobilization using electric field.** *Proceedings of the National Academy of Sciences of the United States of America*
  Emaminejad, S., Javanmard, M., Gupta, C., Chang, S., Davis, R. W., Howe, R. T.
  2015; 112 (7): 1995-1999
- **A Simple Method for Encapsulating Single Cells in Alginate Microspheres Allows for Direct PCR and Whole Genome Amplification** *PLOS ONE*
  Bigdeli, S., Dettloff, R. O., Frank, C. W., Davis, R. W., Crosby, L. D.
  2015; 10 (2)
- **Mice are not men.** *Proceedings of the National Academy of Sciences of the United States of America*
  Warren, H. S., Tompkins, R. G., Moldawer, L. L., Seok, J., Xu, W., Mindrinos, M. N., Maier, R. V., Xiao, W., Davis, R. W.
  2015; 112 (4): E345-?
- **The conserved histone deacetylase Rpd3 and its DNA binding subunit Ume6 control dynamic transcript architecture during mitotic growth and meiotic development** *NUCLEIC ACIDS RESEARCH*
  Lardenois, A., Stuparevic, I., Liu, Y., Law, M. J., Becker, E., Smagulova, F., Waern, K., Guilleux, M., Horecka, J., Chu, A., Kervarrec, C., Strich, R., Snyder, et al
  2015; 43 (1): 115-128
- **RAPID, LABEL FREE, HIGH THROUGHPUT, MINIATURIZED, AND INEXPENSIVE NANOELECTRONIC ARRAY AS A CANCER DIAGNOSIS TOOL**
  Esfandyarpour, R., Koochak, Z., Harris, J. S., Davis, R. W., IEEE
  IEEE.2015: 1523–26
- **RASA: Robust Alternative Splicing Analysis for Human Transcriptome Arrays.** *Scientific reports*
  Seok, J., Xu, W., Davis, R. W., Xiao, W.
  2015; 5: 11917-?
- **A hybrid approach of gene sets and single genes for the prediction of survival risks with gene expression data.** *PloS one*
  Seok, J., Davis, R. W., Xiao, W.
  2015; 10 (5)
- **Detecting differential protein expression in large-scale population proteomics** *BIOINFORMATICS*
  Ryu, S. Y., Qian, W., Camp, D. G., Smith, R. D., Tompkins, R. G., Davis, R. W., Xiao, W.
  2014; 30 (19): 2741-2746
- **Surface charge sensing by altering the phase transition in VO2** *JOURNAL OF APPLIED PHYSICS*
  Kumar, S., Esfandyarpour, R., Davis, R., Nishi, Y.
  2014; 116 (7)
- **Targeted and highly multiplexed detection of microorganisms by employing an ensemble of molecular probes.** *Applied and environmental microbiology*
  Xu, W., Krishnakumar, S., Miranda, M., Jensen, M. A., Fukushima, M., Palm, C., Fung, E., Davis, R. W., St Onge, R. P., Hyman, R. W.
  2014; 80 (14): 4153-4161
- **EXTENDED COVERAGE BY NEXT GENERATION SEQUENCING METHODS REFINES THE CHARACTERIZATION OF THE COMMON AND WELL DOCUMENTED HLA ALLELES**
  Fernandez-Vina, M. A., Wang, C., Krishnakumar, S., Levinson, D., Davis, R. W., Mindrinos, M. N.
  WILEY-BLACKWELL.2014: 27–28
- **Multiplexed actuation using ultra dielectrophoresis for proteomics applications: a comprehensive electrical and electrothermal design methodology.** *Lab on a chip*
  Emaminejad, S., Dutton, R. W., Davis, R. W., Javanmard, M.
  2014; 14 (12): 2105-2114
- **Multiplexed actuation using ultra dielectrophoresis for proteomics applications: a comprehensive electrical and electrothermal design methodology.** *Lab on a chip*

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2014; 14 (12): 2105-2114

- **Single cell mutational analysis of PIK3CA in circulating tumor cells and metastases in breast cancer reveals heterogeneity, discordance, and mutation persistence in cultured disseminated tumor cells from bone marrow** *BMC CANCER*
  Deng, G., Krishnakumar, S., Powell, A. A., Zhang, H., Mindrinos, M. N., Telli, M. L., Davis, R. W., Jeffrey, S. S.
  2014; 14

- **Next generation 1536-well oligonucleotide synthesizer with on-the-fly dispense (vol 171, pg 76, 2014)** *JOURNAL OF BIOTECHNOLOGY*
  Jensen, M., Roberts, L., Johnson, A., Anderson, K., Huber, D., Fukushima, M., Davis, R.
  2014; 179: 71

- **Nanoelectronic impedance detection of target cells.** *Biotechnology and bioengineering*
  Esfandyarpour, R., Javanmard, M., Koochak, Z., Harris, J. S., Davis, R. W.
  2014; 111 (6): 1161-1169

- **IpO: plasmids and methods for simplified, PCR-based DNA transplant in yeast** *YEAST*
  Horecka, J., Chu, A. M., Davis, R. W.
  2014; 31 (5): 185-193

- **Benchmarking Outcomes in the Critically Injured Burn Patient** *ANNALS OF SURGERY*
  Klein, M. B., Goverman, J., Hayden, D. L., Fagan, S. P., McDonald-Smith, G. P., Alexander, A. K., Gamelli, R. L., Gibran, N. S., Finnerty, C. C., Jeschke, M. G., Arnoldo, B., Wispelwey, B., Mindrinos, et al
  2014; 259 (5): 833–41

- **Mapping the Cellular Response to Small Molecules Using Chemogenomic Fitness Signatures** *SCIENCE*
  Lee, A. Y., St Onge, R. P., Proctor, M. J., Wallace, I. M., Nile, A. H., Spagnuolo, P. A., Jitkova, Y., Gronda, M., Wu, Y., Kim, M. K., Cheung-Ong, K., Torres, N. P., Spear, et al
  2014; 344 (6180): 208-211

- **A functional screen for copper homeostasis genes identifies a pharmacologically tractable cellular system** *BMC GENOMICS*
  Schlecht, U., Suresh, S., Xu, W., Aparicio, A. M., Chu, A., Proctor, M. J., Davis, R. W., Scharfe, C., St Onge, R. P.
  2014; 15

- **Scan statistics analysis for detection of introns in time-course tiling array data** *STATISTICAL APPLICATIONS IN GENETICS AND MOLECULAR BIOLOGY*
  Reiner-Benaim, A., Davis, R. W., Juneau, K.
  2014; 13 (2): 173-190

- **The 50:50 method for PCR-based seamless genome editing in yeast** *YEAST*
  Horecka, J., Davis, R. W.
  2014; 31 (3): 103-112

- **Label-free electronic probing of nucleic acids and proteins at the nanoscale using the nanoneedle biosensor (vol 7, 044114, 2013)** *BIOMICROFLUIDICS*
  Esfandyarpour, R., Javanmard, M., Koochak, Z., Esfandyarpour, H., Harris, J. S., Davis, R. W.
  2014; 8 (2)

- **Depletion of cells and abundant proteins from biological samples by enhanced dielectrophoresis** *17th International Conference on Solid-State Sensors, Actuators and Microsystems*
  Javanmard, M., Emaminejad, S., Gupta, C., Provine, J., Davis, R. W., Howe, R. T.
  ELSEVIER SCIENCE SA.2014: 918–24

- **Digital microfluidic assay for protein detection.** *Proceedings of the National Academy of Sciences of the United States of America*
  Mok, J., Mindrinos, M. N., Davis, R. W., Javanmard, M.
  2014; 111 (6): 2110-2115

- **Next generation 1536-well oligonucleotide synthesizer with on-the-fly dispense.** *Journal of biotechnology*
  Jensen, M., Roberts, L., Johnson, A., Fukushima, M., Davis, R.
  2014; 171: 76-81

- **Molecular indexing enables quantitative targeted RNA sequencing and reveals poor efficiencies in standard library preparations** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Fu, G. K., Xu, W., Wilhelmy, J., Mindrinos, M. N., Davis, R. W., Xiao, W., Fodor, S. P.
  2014; 111 (5): 1891-1896

- **Diversity of the Vaginal Microbiome Correlates With Preterm Birth** *REPRODUCTIVE SCIENCES*
  Hyman, R. W., Fukushima, M., Jiang, H., Fung, E., Rand, L., Johnson, B., Vo, K. C., Caughey, A. B., Hilton, J. F., Davis, R. W., Giudice, L. C.
  2014; 21 (1): 32-40

- **MATRIX INDEPENDENT LABEL-FREE NANOELECTRONIC BIOSENSOR**
  Esfandyarpour, R., Javanmard, M., Koochak, Z., Harris, J. S., Davis, R. W., IEEE
  IEEE.2014: 1083–86

- **Functional Genomics with a Comprehensive Library of Transposon Mutants for the Sulfate-Reducing Bacterium Desulfovibrio alaskensis G20.** *mBio*
  Kuehl, J. V., Price, M. N., Ray, J., Wetmore, K. M., Esquivel, Z., Kazakov, A. E., Nguyen, M., Kuehn, R., Davis, R. W., Hazen, T. C., Arkin, A. P., Deutschbauer, A.
  2014; 5 (3): e01041–14

- **PITPs as targets for selectively interfering with phosphoinositide signaling in cells** *NATURE CHEMICAL BIOLOGY*
  Nile, A. H., Tripathi, A., Yuan, P., Mousley, C. J., Suresh, S., Wallace, I. M., Shah, S. D., Pohlhaus, D. T., Temple, B., Nislow, C., Giaever, G., Tropsha, A., Davis, et al
  2014; 10 (1): 76-U123

- **Surface-Enhanced Raman Scattering (SERS) for Detection of Phenylketonuria for Newborn Screening** *Conference on Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XI*
  Javanmard, M., Davis, R. W.
  SPIE-INT SOC OPTICAL ENGINEERING.2014

- **Label-free Electronic Detection of Target Cells** *Conference on Microfluidics, BioMEMS, and Medical Microsystems XII*
  Esfandyarpour, R., Javanmard, M., Harris, J., Davis, R. W.
  SPIE-INT SOC OPTICAL ENGINEERING.2014

- **Computational identification and analysis of orphan assembly-line polyketide synthases** *JOURNAL OF ANTIBIOTICS*
  O'Brien, R. V., Davis, R. W., Khosla, C., Hillenmeyer, M. E.
  2014; 67 (1): 89-97

- **PRINCIPAL TREND ANALYSIS FOR TIME-COURSE DATA WITH APPLICATIONS IN GENOMIC MEDICINE** *ANNALS OF APPLIED STATISTICS*
  Zhang, Y., Davis, R.
  2013; 7 (4): 2205-2228

- **Simulation and fabrication of a new novel 3D injectable biosensor for high throughput genomics and proteomics in a lab-on-a-chip device.** *Nanotechnology*
  Esfandyarpour, R., Esfandyarpour, H., Harris, J. S., Davis, R. W.
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