

James Robert White

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Education

University of Maryland – College Park, 2006 – 2010
Ph.D. Applied Mathematics and Scientific Computation – May 2010

University of Maryland – College Park, 2002 – 2006
B.S. *summa cum laude*, Mathematics – May 2006
Grade-point average: 4.0

Expertise in Computational Biology, Bioinformatics & Biostatistics

Computing

Perl / R / Python
Linux HPC / AWS

Microbiome

16S rRNA amplicon
Metagenomics
Metatranscriptomics
Metabolomics
Bacterial genomics
Phylogenetics
qPCR design

Cancer Genomics

Targeted-tissue
Targeted-plasma
ctDNA / cfDNA
Whole-exome
Mutational burden
Mutational signatures
HLA typing
Neoantigen analysis
RNA-seq
TCR-seq

Biostatistics

Machine learning
Biomarker discovery
IVD V&V studies
Regression
Survival analysis
Ordination methods
Longitudinal analysis
Power analysis

Experience

January 2014 – Present

Founder | Resphera Biosciences

Resphera Biosciences is developing innovative computational and statistical approaches to next-generation DNA sequence analysis to help advance translational research in the fields of microbiome, cancer genomics and immunology.

June 2011 – Present

Independent contractor

Research specialist in computational biology and statistical analysis

June 2010 – April 2013

Bioinformatics software engineer II – The Institute for Genome Sciences – University of Maryland School of Medicine
Development of automated cloud-based bioinformatics pipelines for microbiome and other multi-omics datasets

May 2008 – August 2008

Neural prosthetics algorithms group – Johns Hopkins Applied Physics Lab

Designed and implemented decision fusion framework (Kalman filtering and artificial neural networks) for multimodal neural prosthetic devices (DARPA-sponsored)

May 2007 – May 2010

Metagenomics research group – University of Maryland College Park

Development of novel statistical methods for comparative and longitudinal metagenomic data analysis

Publications

1. Mathios D, Johansen JS, Cristiano S, Medina JE, Phallen J, Larsen KR, Bruhm DC, Niknafs N, Ferreira L, Adleff V, Chiao JY, Leal A, Noe M, White JR, Arun AS, Hruban C, Annapragada AV, Jensen S, Orntoft MW, Madsen AH, Carvalho B, de Wit M, Carey J, Dracopoli NC, Maddala T, Fang KC, Hartman AR, Forde PM, Anagnostou V, Brahmer J, Fijneman R, Nielsen H, Meijer G, Andersen C, Møllgaard A, Bojesen S, Scharpf R, Velculescu VE. **Detection and characterization of lung cancer using cell-free DNA fragmentomes.** *Nature Communications*. 12:1, August 2021.
2. Foote MB, White JR, Jee J, Argilés G, Wan JC, Rousseau B, Pessin MS, Diaz LA. **Association of Antineoplastic**

Therapy With Decreased SARS-CoV-2 Infection Rates in Patients With Cancer. *JAMA Oncology*. doi:10.1001/jamaoncol.2021.3585, August 2021.

3. Shields CE, White JR, Chung L, Wenzel A, Hicks JL, Tam AJ, Chan JL, Dejea CM, Fan H, Michel J, Maiuri AR, Sriramkumar S, Podicheti R, Rusch DB, Wang H, De Marzo AM, Besharati S, Anders RA, Baylin SB, O'Hagan HM, Housseau F, Sears CL. **Bacterial-driven inflammation and mutant BRAF expression combine to promote murine colon tumorigenesis that is sensitive to immune checkpoint therapy.** *Cancer Discovery*. 11:1, June 2021.
4. Shaikh FY, White JR, Gills JJ, Hakozaki T, Richard C, Routy B, Okuma Y, Usyk M, Pandey A, Weber JS, Ahn J, Lipson EJ, Naidoo J, Pardoll DM, Sears CL. **A Uniform Computational Approach Improved on Existing Pipelines to Reveal Microbiome Biomarkers of Nonresponse to Immune Checkpoint Inhibitors.** *Clinical Cancer Research*. 27:9, May 2021.
5. Shatkin-Margolis A, White JR, Jedlicka AE, Tam T, Hill A, Yeung J, Crisp CC, Pauls RN. **The effect of mindfulness-based stress reduction on the urinary microbiome in interstitial cystitis.** *International Urogynecology Journal*. 15:1, May 2021.
6. Noel S, Mohammad F, White JR, Lee K, Gharaie S, Rabb H. **Gut microbiota-immune system interactions during acute kidney injury.** *Kidney360*. 2:3, March 2021.
7. Anagnostou V, Bruhm DC, Niknafs N, White JR, Shao XM, Sidhom JW, Stein J, Tsai HL, Wang H, Belcaid Z, Murray J, Balan A, Ferreira L, Ross-Macdonald P, Wind-Rotolo M, Baras AS, Taube J, Karchin R, Scharpf RB, Grasso C, Ribas A, Pardoll DM, Topalian SL, Velculescu VE. **Integrative Tumor and Immune Cell Multi-omic Analyses Predict Response to Immune Checkpoint Blockade in Melanoma.** *Cell Reports Medicine*. 1:8, November 2020.
8. Reuss JE, Anagnostou V, Cottrell TR, Smith KN, Verde F, Zahurak M, Lanis M, Murray JC, Chan HY, McCarthy C, Wang D, White JR, Yang S, Battafarano R, Broderick S, Bush E, Brock M, Ha J, Jones D, Merghoub T, Taube J, Velculescu VE, Rosner G, Illei P, Pardoll DM, Topalian S, Naidoo J, Levy B, Hellmann MD, Brahmer JR, Chafft JE, Forde PM. **Neoadjuvant nivolumab plus ipilimumab in resectable non-small cell lung cancer.** *Journal for Immunotherapy of Cancer*. 8:2, September 2020.
9. White JR, Foote MB, Jee J, Argilés G, Wan JM, Diaz LA. **PI3K/mTOR and topoisomerase inhibitors with potential activity against SARS-CoV-2 infection.** *medRxiv [pre-print]*. doi.org/10.1101/2020.09.02.20186783, September 2020.
10. Banerjee A, Herring CA, Chen B, Kim H, Simmons AJ, Southard-Smith AN, Allaman MM, White JR, Macedonia MC, Mckinley ET, Solano MA, Scoville E, Liu Q, Wilson K, Coffey R, Washington M, Goettel J, Lau K. **Succinate Produced by Intestinal Microbes Promotes Specification of Tuft Cells to Suppress Ileal Inflammation.** *Gastroenterology*. doi.org/10.1053/j.gastro.2020.08.029, August 2020.
11. Noë M, Niknafs N, Fischer CG, Hackeng WM, Guthrie VB, Hosoda W, Debeljak M, Papp E, Adleff V, White JR, Luchini C, Pea A, Scarpa A, Butturini G, Zamboni G, Castelli P, Hong S, Yachida S, Hiraoka N, Gill A, Samra J, Offerhaus G, Hoorens A, Verheij J, Jansen C, Adsay N, Jiang W, Winter J, Albores-Saavedra J, Terris B, Thompson E, Roberts N, Hruban R, Karchin R, Scharpf R, Brosens L, Velculescu V, Wood L. **Genomic characterization of malignant progression in neoplastic pancreatic cysts.** *Nature Communications*. 11:1, August 2020.
12. Merino DM, McShane LM, Fabrizio D, Funari V, Chen SJ, White JR, Wenz P, Baden J, Barrett JC, Chaudhary R, Chen L, Chen W, Cheng J, Cyanam D, Dickey J, Gupta V, Hellmann M, Helman E, Li Y, Maas J, Papin A, Patidar R, Quinn K, Rizvi N, Tae H, Ward C, Xie M, Zehir A, Zhao C, Dietel M, Stenzinger A, Stewart M, Allen J. **Establishing guidelines to harmonize tumor mutational burden (TMB): in silico assessment of variation in TMB quantification across diagnostic platforms: phase I of the Friends of Cancer Research TMB Harmonization Project.** *Journal for Immunotherapy of Cancer*. 8:1, March 2020.
13. Labriola MK, Zhu J, Gupta R, McCall S, Jackson J, Kong EF, White JR, Cerqueira G, Gerding K, Simmons JK, George D, Zhang T. **Characterization of tumor mutation burden, PD-L1 and DNA repair genes to assess relationship to immune checkpoint inhibitors response in metastatic renal cell carcinoma.** *Journal for Immunotherapy of Cancer*. 8:1, March 2020.
14. Velculescu V, Zhang T, White JR, Diaz L (inventors); Personal Genome Diagnostics Inc, assignee. **Neoantigen treatment prioritization using multivariate analysis based on: HLA genotype, self-similarity, similarity to known antigens, antigen expression levels and mutant allele frequency.** *United States Patent*. US 10,563,266, February 2020.
15. Liss MA, Chen Y, Rodriguez R, Pruthi D, Johnson-Pais T, Wang H, Mansour A, White JR, Kaushik D. **Microbiome within Primary Tumor Tissue from Renal Cell Carcinoma May Be Associated with PD-L1 Expression of the Venous Tumor Thrombus.** *Advances in Urology*. 2020:9068068, February 2020.
16. Anagnostou V, Niknafs N, Marrone K, Bruhm DC, White JR, Naidoo J, Hummelink K, Monkhorst K, Lalezari F, Lanis M, Rosner S, Reuss J, Smith K, Adleff V, Rodgers K, Belcaid Z, Rhymee L, Levy B, Feliciano J, Hann C, Ettinger D, Georgiades C, Verde F, Illei P, Li Q, Baras A, Gabrielson E, Brock M, Karchin R, Pardoll D, Baylin S, Brahmer J, Scharpf R, Forde P, Velculescu V. **Multimodal genomic features predict outcome of immune checkpoint**

blockade in non-small-cell lung cancer. *Nature Cancer.* 1:1, January 2020.

17. Zhang A, Sodhi C, Wang M, Shores D, Fulton W, Prindle T, Brosten S, O'Hare E, Lau A, Ding H, Jia H, Lu P, White JR, Hui J, Sears C, Hackam D, Alaish S. **A Central Role for Lipocalin-2 in the Adaptation to Short Bowel Syndrome through Downregulation of IL-22 in Mice.** *Cellular and Molecular Gastroenterology and Hepatology.* 10:2, January 2020.
18. De Groot AS, Skowron G, White JR, Boyle C, Richard G, Serreze D, Martin WD. **Therapeutic Administration of Tregitope-Human Albumin Fusion with Insulin Peptides to Promote Antigen-Specific Adaptive Tolerance Induction.** *Scientific Reports.* 9:1, November 2019.
19. Georgiadis A, Durham JN, Keefer LA, Bartlett BR, Zielonka M, Murphy D, White JR, Lu S, Verner EL, Ruan F, Riley D, Anders RA, Gedvilaite E, Angiuoli S, Jones S, Velculescu VE, Le DT, Diaz Jr LA, Sausen M. **Noninvasive Detection of Microsatellite Instability and High Tumor Mutation Burden in Cancer Patients Treated with PD-1 Blockade.** *Clinical Cancer Research.* doi.10.1158/1078-0432.CCR-19-1372, September 2019.
20. Riquelme E, Zhang Y, Zhang L, Montiel M, Zoltan M, Dong W, Quesada P, Sahin I, Chandra V, San Lucas A, Scheet P, Xu H, Hanash SM, Feng L, Burks JK, Do KA, Peterson CB, Nejman D, Tzeng CD, Kim MP, Sears CL, Ajami N, Petrosino J, Wood LD, Maitra A, Strausman R, Katz M, White JR, Jenq R, Wargo J, McAllister F. **Tumor Microbiome Diversity and Composition Influence Pancreatic Cancer Outcomes.** *Cell.* 178:4, August 2019.
21. Wan JC, White JR, Diaz Jr LA. **Hey CIRI, What's My Prognosis?** *Cell.* 178:3, July 2019.
22. Cristiano S, Leal A, Phallen J, Fiksel J, Adleff V, Bruhm DC, Jensen S, Medina JE, Hruban C, White JR, Palsgrove DN, Niknafs N, Anagnostou V, Forde P, Naidoo J, Marrone K, Brahmer J, Woodward BD, Husain H, van Rooijen KL, Ørntoft AH, van de Velde CJ, Verheij M, Cats A, Punt CJ, Vink GR, van Grieken NC, Koopman M, Fijneman RJ, Johansen JS, Nielsen HJ, Meijer GA, Andersen CL, Scharpf RB, Velculescu VE. **Genome-wide cell-free DNA fragmentation in patients with cancer.** *Nature.* doi.org/10.1038/s41586-019-1272-6, May 2019.
23. Tuddenham SA, Koay WL, Zhao N, White JR, Ghanem KG, Sears CL. **The Impact of HIV Infection on Gut Microbiota Alpha-Diversity: An Individual Level Meta-analysis.** *Clinical Infectious Diseases.* doi.10.1093/cid/ciz258, March 2019.
24. Anagnostou V, Forde PM, White JR, Niknafs N, Hruban C, Naidoo J, Marrone K, Sivakumar A, Bruhm DC, Rosner S, Phallen J, Leal A, Adleff V, Smith KN, Cottrell TR, Rhymee L, Palsgrove DN, Hann CL, Levy B, Feliciano J, Georgiades C, Verde F, Illei P, Li QK, Gabrielson E, Brock MV, Isbell JM, Sauter JL, Taube J, Scharpf RB, Karchin R, Pardoll DM, Chaft JE, Hellmann MD, Brahmer JR, Velculescu VE. **Dynamics of Tumor and Immune Responses during Immune Checkpoint Blockade in Non-Small Cell Lung Cancer.** *Cancer Research.* 79:6, March 2019.
25. Tomkovich S, Dejea CM, Winglee K, Drewes JL, Chung L, Housseau F, Pope JL, Gauthier J, Sun X, Mühlbauer M, Liu X, Fathi P, Anders RA, Besharati S, Perez-Chanona E, Yang Y, Ding H, Wu X, Wu S, White JR, Gharaibeh RZ, Fodor AA, Wang H, Pardoll DM, Jobin C, Sears CL. **Human colon mucosal biofilms from healthy or colon cancer hosts are carcinogenic.** *Journal of Clinical Investigation.* 129:4, March 2019.
26. Liss MA, Leach RJ, Rourke E, Sherrill A, Johnson-Pais T, Lai Z, Basler J, White JR, Patterson JE. **Microbiome diversity in carriers of fluoroquinolone resistant Escherichia coli.** *Investigative and Clinical Urology.* 60:2, March 2019.
27. Greathouse KL, White JR, Padgett RN, Perrotta BG, Jenkins GD, Chia N, Chen J. **Gut microbiome meta-analysis reveals dysbiosis is independent of body mass index in predicting risk of obesity-associated CRC.** *BMJ Open Gastroenterology.* 6:1, February 2019.
28. Khamash DF, Mongodin EF, White JR, Voskertchian A, Hittle L, Colantuoni E, Milstone AM. **The Association between the Developing Nasal Microbiota of Hospitalized Neonates and Staphylococcus aureus Colonization.** *Open Forum Infectious Diseases.* 6:4, February 2019.
29. Bodogai M, O'connell J, Kim K, Kim Y, Moritoh K, Chen C, Gusev F, Vaughan K, Shulzhenko N, Mattison JA, Lee-Chang C, Chen W, Carlson O, Becker K, Gurung M, Morgun A, White JR, Meade T, Perdue K, Mack M, Ferrucci L, Trinchieri G, de Cabo R, Rogaev E, Egan J, Wu J, Biragyn A. **Commensal bacteria contribute to insulin resistance in aging by activating innate B1a cells.** *Science Translational Medicine.* 14:10, November 2018.
30. Papp E, Hallberg D, Konecny GE, Bruhm DC, Adleff A, Noe M, Kagiampakis I, Palsgrove D, Conklin D, Kinose Y, White JR, Press MF, Drapkin R, Easwaran H, Baylin SB, Slamon D, Velculescu, VE, Scharpf RB. **Integrated Genomic, Epigenomic, and Expression Analyses of Ovarian Cancer Cell Lines.** *Cell Reports.* 9:27, November 2018.
31. Prandovszky E, Li Y, Sabunciyan S, Steinfeldt CB, Avalos LN, Gressitt KL, White JR, Severance EG, Pletrnikov MV, Xiao J, Yolken RH. **Toxoplasma gondii-induced long-term changes in the upper intestinal microflora during the chronic stage of infection.** *Scientifica.* November 2018.
32. Angiuoli SV, White JR, Jones S. **Regarding the Congruence Between 2 Circulating Tumor DNA Sequencing Assays.** *JAMA Oncology.* 4:10, October 2018.
33. Godoy-Vitorino F, Romaguera J, Zhao C, Vargas-Robles D, Ortiz-Morales G, Vázquez-Sánchez F, Sanchez-Vázquez M, de la Garza-Casillas M, Martinez-Ferrer M, White JR, Bittinger K, Dominguez-Bello MG, Blaser MJ.

Cervicovaginal Fungi and Bacteria Associated With Cervical Intraepithelial Neoplasia and High-Risk Human Papillomavirus Infections in a Hispanic Population. *Frontiers in Microbiology.* 9, October 2018.

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35. Jarvis KG, Daquigan N, White JR, Morin PM, Howard LM, Manetas JE, Ottesen A, Ramachandran P, Grim CJ. **Microbiomes associated with foods from plant and animal sources.** *Frontiers in Microbiology.* 9, October 2018.
36. Wood DE, White JR, Georgiadis A, Van Emburgh B, Parpart-Li S, Mitchell J, Anagnostou V, Niknafs N, Karchin R, Papp E, McCord C, LoVerso P, Riley D, Diaz LA, Jones S, Sausen M, Velculescu VE, Angiuoli SV. **A machine learning approach for somatic mutation discovery.** *Science Translational Medicine.* 10:457, September 2018.
37. Greathouse KL, White JR, Vargas AJ, Bliskovsky VV, Beck JA, von Muhlinen N, Polley E, Bowman E, Khan M, Robles A, Cooks T, Ryan B, Padgett N, Dzutsev A, Trinchieri G, Pineda M, Bilke S, Meltzer P, Hokenstad A, Stickrod T, Walther-Antonio M, Earl J, Mell J, Krol J, Balashov S, Bhat A, Ehrlich G, Valm A, Deming C, Conlan S, Oh J, Segre J, Harris C. **Interaction between the microbiome and TP53 in human lung cancer.** *Genome Biology.* 19:1, August 2018.
38. Sfanos KS, Markowski M, Peiffer L, Ernst S, White JR, Pienta K, Antonarakis E, Ross E. **Compositional differences in gastrointestinal microbiota in prostate cancer patients treated with androgen axis-targeted therapies.** *Prostate Cancer and Prostatic Diseases.* doi.org/10.1038/s41391-018-0061, July 2018.
39. Liss MA, White JR, Goros M, Gelfond J, Leach R, Johnson-Pais T, Lai Z, Rourke E, Basler J, Ankerst D, Shah, DP. **Metabolic biosynthesis pathways identified from fecal microbiome associated with prostate cancer.** *European Urology.* doi.org/10.1016/j.eururo.2018.06.033, July 2018.
40. Boudadi K, Suzman DL, Anagnostou V, Fu W, Luber B, Wang H, Niknafs N, White JR, Silberstein JL, Sullivan R, Dowling D, Harb R, Nirschl R, Veeneman B, Tomlins S, Wang Y, Jendrisak A, Graf R, Dittamore R, Carducci M, Eisenberger M, Haffner M, Meeker A, Eshleman J, Luo J, Velculescu V, Drake C, Antonarakis ES. **Ipilimumab plus nivolumab and DNA-repair defects in AR-V7-expressing metastatic prostate cancer.** *Oncotarget.* 9:47, June 2018.
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43. Guerrero-Preston R, White JR, Godoy-Vitorino F, Rodriguez-Hilario A, Navarro K, Gonzalez H, Michailidi C, Jedlicka A, Canapp S, Bondy J, Dziedzic A, Mora-Lagos B, Rivera-Alvarez G, Ili-Gangas C, Brebi-Mieville P, Westra W, Koch W, Kang H, Marchionni L, Kim Y, Sidransky D. **High-resolution microbiome profiling uncovers Fusobacterium nucleatum, Lactobacillus gasseri/johnsonii, and Lactobacillus vaginalis associated to oral and oropharyngeal cancer in saliva from HPV positive and HPV negative patients treated with surgery and chemo-radiation.** *Oncotarget.* 8:67, December 2017.
44. Drewes JL, White JR, Dejea CM, Fathi P, Iyadorai T, Vadivelu J, Roslani AC, Wick EC, Mongodin EF, Loke MF, Thulasi K. **High-resolution bacterial 16S rRNA gene profile meta-analysis and biofilm status reveal common colorectal cancer consortia.** *npj Biofilms and Microbiomes.* 3:34, November 2017.
45. Grim CJ, Daquigan N, Lusk Pfefer TS, Ottesen AR, White JR, Jarvis KG. **High-Resolution Microbiome Profiling for Detection and Tracking of Salmonella enterica.** *Frontiers Microbiology.* 8:1587, August 2017.
46. Phallen J, Sausen M, Adleff V, Leal A, Hruban C, White JR, Anagnostou V, Fiksel J, Cristiano S, Papp E, Speir S, Reinert T, Orntoft M, Woodward B, Murphy D, Parpart-Li S, Riley D, Nesselbush M, Sengamalay N, Georgiadis A, Li Q, Madsen M, Mortensen F, Huiskens J, Punt C, van Grieken N, Fijneman R, Meijer G, Husain H, Scharpf R, Diaz LA, Jones S, Angiuoli S, Orntoft T, Nielsen HJ, Andersen CL, Velculescu VE. **Direct detection of early-stage cancers using circulating tumor DNA.** *Science Translational Medicine.* 9:403, August 2017.
47. Shrestha E, White JR, Yu SH, Kulac I, Ertunc O, DeMarzo AM, Yegnasubramanian S, Mangold LA, Partin AW, Sfanos KS. **Profiling the Urinary Microbiome in Men with Positive versus Negative Biopsies for Prostate Cancer.** *The Journal of Urology.* doi: j.juro.2017.08.001, August 2017.
48. White JR, Davies K, Stern J. **High-Resolution Gut Microbiome Profiling Reveals Species-level and Gene Content Differences Between Kidney Stone Formers and Controls.** *The Journal of Urology.* 197:4 e229, April 2017.
49. Abernethy M, Rosenfeld A, White JR, Mueller M, Lewicky-Gaupp C, Kenton K. **Urinary Microbiome and Cytokine**

Levels in Women With Interstitial Cystitis. *Obstetrics & Gynecology*. 129:3, March 2017.

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51. Daquigan N, Grim CJ, White JR, Hanes D, and Karen G. Jarvis. **Early Recovery of Salmonella from Food Using a 6-Hour Non-selective Pre-enrichment and Reformulation of Tetrathionate Broth.** *Frontiers in Microbiology*. 7, December 2016.
52. Ottesen A, Ramachandran P, Reed E, White JR, Hasan N, Subramanian P, Ryan G, Jarvis K, Grim C, Daquigan N, Hanes D. **Enrichment dynamics of Listeria monocytogenes and the associated microbiome from naturally contaminated ice cream linked to a listeriosis outbreak.** *BMC Microbiology*. 16:1, November 2016.
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