

JEFFREY ALLEN BORGIA, PHD

Jeffrey_Borgia@rush.edu

EDUCATION

Postgraduate

Rush University Medical Center, Chicago, IL 2002 -2007
Postdoctoral Scholar
Department of Biochemistry
Advisor: Dr. Theodore R. Oegema, Jr.

Florida Atlantic University, Boca Raton, FL 1999 - 2002
Postdoctoral Fellow
Department of Chemistry & Biochemistry
Advisor: Dr. Gregg B. Fields

PhD

University of Minnesota, Minneapolis, MN 1992 – 1999
Doctor of Philosophy
Thesis: “Purification and Properties of the Rat Chondrosarcoma Xylosyl Kinase”
Advisor: Dr. Theodore R. Oegema, Jr.

BS

Eckerd College, St. Petersburg, FL 1988 - 1992
Bachelor of Science
Major: Chemistry
Minors: Biology and Psychology

HONORS AND AWARDS

- Designated ‘Swim Across America’ Laboratory for Cancer Research 10/2015
- Outstanding Mentor Award, High School Summer Research Program, The American Cancer Society, Illinois Division 8/2012
- Outstanding Mentor Award, High School Summer Research Program, The American Cancer Society, Illinois Division 8/2013
- Scientific Adviser; ACS – Cancer Action Network, Lobby day 2011 9/2011
- Featured Researcher 4/2008
Rush through Chicago: Our Home, Our Heroes, Our Hope
The Inaugural Rush Associates Board Gala
- NIH Predoctoral Scholar 1993 - 1997

ACADEMIC APPOINTMENTS

- Associate Professor, Department of Cell and Molecular Medicine
Rush University Medical Center, Chicago, IL 2/2017 – present
- Associate Professor, Department of Pathology
Rush University Medical Center, Chicago, IL 7/2016 – present
- Associate Professor, Department of Biochemistry
Rush University Medical Center, Chicago, IL 7/2016 – 12/2016
- Associate Professor, Department of Radiation Oncology
Rush University Medical Center, Chicago, IL 7/2013 – 3/2019
- Director; The Translational Cancer Track, Graduate College
Rush University Medical Center, Chicago, IL 6/2015 – present
- Assistant Professor, Department of Pathology (Primary)
Rush University Medical Center, Chicago, IL 7/2013 – 6/2016
- Assistant Professor, Department of Biochemistry (Primary)
Rush University Medical Center, Chicago, IL 6/2006 – 6/2013
- Instructor, Department of Biochemistry
Rush University Medical Center, Chicago, IL 10/2002 - 5/2006
- Adjunct Professor, Department of Chemistry and Biochemistry
Florida Atlantic University, Boca Raton, FL 8/1999 – 9/2000

PATENTS

- R346 Lung Cancer Tests. [13/880,103 14904-14]
- R407 Biomarker Panel For Detecting Lung Cancer [14/206,486; 14904-58]
- R446 Biomarkers of Rapid Progression in Advanced Non-Small Cell Lung Cancer.
[61/913,740 14904-44]
- R447 Angiogenesis Biomarkers Associated With Disease Progression in Lung Cancer
[61/927,076 14904-45]
- R457 Circulating Insulin-Like Growth Factor (IGF) - Associated Proteins for the
Detection of Lung Cancer. [61/984,507 14904-61]
- R477 Serum test to guide therapy selection in advanced non-small cell lung cancer with
negative or indeterminate EGFR mutational status. (Submitted 11/21/2014)
- R631 Multianalyte Test for Immune Response to SARS-CoV-2 Virus Leading to COVID-19
[62/704,968] (Filed 6/20/2020)
 - Non-Exclusive License: Tempus (executed 5/2020)
 - Non-Exclusive License: Biodesix (pending execution in 9/2020)

COMMITTEE AND ADMINISTRATIVE SERVICES

- Member - Rush University: Committee on Committees 2004 - 2005
- Director - Rush Lung Cancer Biorepository 2004 - 2017
- Director - Rush Biomarker Development Core Facility 2007 - present
- Rush Biochemistry Graduate Education Committee 2009 - present
- Member - Rush Cancer Center, Strategic Steering Committee 2010 - 2013
- Chairman's Advisory Committee, Biochemistry 2010 - present
- Member - Rush Graduate College Re-Engineering Committee 2014 – 2015

- Member - Search Committee – Cancer Bioinformaticist 2014
- Member - Admissions Committee, the Graduate College 2015 - 2019
- Member - The Rush Graduate College Education Committee 2015 - 2019
- Member - Search Committee – Breast Cancer Research 2016
- Director - The Rush University Biorepository Core 2017 – present
- Member - Search Committee: Chair for Radiation Oncology 2018 - 2019
- Member - Search Committee: Chair for Stem Cell & Bone Marrow Transplant 2018
- Member – Curriculum Review Committee, IBS Program 2019
- Member – Precision Oncology and Genomics Program, RUCC 2019 - present

TEACHING EXPERIENCE

Rush University, Chicago, IL

Administrative

Director; The Translational Cancer Research Track 6/2015 – 7/2019
 Graduate College, Rush University Medical Center, Chicago, IL

Course Director

- GCC594 Seminar Series for the Translational Cancer Track 2016 – 2018
 - Fall & Spring Semesters; 1 contact hour weekly
 - Co-Director with Deri Morgan, PhD
- GCC505 Laboratory Techniques in the Biomedical Sciences 2015 – 2018
 - Fall Semester; 1 contact hour weekly
- GCC550 Practical Bioinformatics 2017- 2019
- GCC712 Readings in Cellular Biochemistry 2015 – 2018
 - Fall Semester; 2 contact hours weekly; 16 contact hours
- BCH 589 Biochemistry Journal Club 2009 - 2014
 - Spring Semester; 2 contact hours weekly; 2 contact hours

Team-taught courses

- GCC 611: Cancer Biology I 2017 - present
 - Fall Semester, 2 lectures; 6 contact hours
- GCC 612: Cancer Biology II 2017 – present
 - Spring Semester, 1 lecture: 2 contact hours
- BCH 624: Connective Tissue Biochemistry 2013 - present
 - Spring Semester; 2 lectures; 4 contact hours
- RMD 510: Cell and Molecular Biology 2008 - 2010
 - Fall Semester, 2 lectures, 4 contact hours
- BCH 572: Medical Biochemistry II 2006 - 2010
 - Winter Quarter; 3 lectures, 6 contact hours
- BCH 571: Medical Biochemistry I 2005 - present
 - Fall Quarter/Semester; 4 lectures, 8 contact hours
- GCC 505 Techniques in Biomedical Sciences 2004, 2013-2018
 - Spring Semester; 1 lecture; 2 contact hours
- GCC 501 Molecular Biology: Genome to Proteome 2006-2009
 - Fall Quarter; 2 lectures; 4 contact hours

Florida Atlantic University, Boca Raton, FL

Course Director

- CHM 2211 3 Organic Chemistry 2 2000
 - Spring Semester; 3 lectures/ week for 12 weeks; 54 contact hours
- CHM 2210 3 Organic Chemistry 1 1999
 - Fall Semester; 3 lectures/ week for 12 weeks; 54 contact hours

Team Taught

- BCH 6740 Advanced Biochemistry 2001
 - Spring Semester; 4 lectures; 6 contact hours

Mentorship to students/residents/trainees/fellows

High School Summer Interns

1. Swathi Reddy 2006, 2007
2. Vikrum Reddy 2008
3. Jeffrey S. Gaynes 2010, 2011
4. Michael Mayer (ACS High School Program) 2012
5. Smriti Kanangat 2012, 2013
6. Hilary Nobel 2012
7. Alexa Rosas (ACS High School Program) 2013
8. Matthew Gaynes 2014, 2015

College Summer Interns

1. Vikrum Reddy 2009
2. David DeCresce 2006
3. Samuel Goodman 2009
4. Clinton Piper 2012, 2013
5. Jacob Shuman 2014
6. Nicholas Lund 2015, 2016
7. Michael Littau 2017, 2018
8. Grant Lewin 2018
9. Katherine Gallo 2018
10. Brett Segobiano 2019

Rush Medical School (M1) Students: Summer Fellows

1. David DeCresce, BS 2009
2. Thomas Holland, BS 2010
3. James Clark, BS 2012
4. Rob Medairos, BS 2014
5. Richard Seto, BS 2014
6. Samantha Kerns, BS 2015
7. Kelsey Gallo, BS 2015
8. Xuanji Wang 2015
9. Anish Raman, BS 2016
10. Jared Fialkoff, BS 2016

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|--------------------------|------|
| 11. Alison Coogan, BS | 2017 |
| 12. Connor Wakefield, BS | 2018 |
| 13. Emma Ryan, BS | 2019 |

Other Medical School (M1) Students: Summer Fellows

- | | |
|--|------------|
| 1. Ronald Ng, BS (UIC) | 2014 |
| 2. Edgar Davila, BS (UIC) | 2014, 2015 |
| 3. Douglas Rybar, BS UIC | 2015 |
| 4. Grant Lewin, BS, MS (Rosalind Franklin) | 2019 |
| 5. Grant Lewin, BS, MS (Rosalind Franklin) | 2020 |

Residents Mentored (One year research rotation)

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|--|-------------|
| 1. Erin C. Farlow, MD (General Surgery) | 2008 – 2009 |
| 2. Patri Marconi, MD (General Surgery) | 2009 – 2010 |
| 3. Michael Vercillo, MD (General Surgery) | 2009 – 2010 |
| 4. David Shersher, MD (General Surgery) | 2010 – 2011 |
| 5. Daniel Rinewalt, MD (General Surgery) | 2011 – 2012 |
| 6. Shaun Daly, MD (General Surgery) | 2011 – 2013 |
| 7. Mohammed Azeem, MD (Internal Medicine) | 2013 – 2014 |
| 8. John Kubasiak, MD (General Surgery) | 2013 – 2014 |
| 9. Yu “Sharon” Chen, MD (Radiation Oncology) | 2013 – 2014 |
| 10. Jamie C. Harris, MD (General Surgery) | 2015 – 2016 |
| 11. Lia Jordano, MD (General Surgery) | 2016 - 2017 |

Postdoctoral Fellows/ Instructors

- | | |
|--------------------------------|----------------|
| 1. Kalpa Patel, PhD | 2007 – 2010 |
| 2. Praneeth Edirisinghe, PhD | 2009 – 2011 |
| 3. Casey A. Frankenberger, PhD | 2015 - 2016 |
| 4. Vineela Chukkapalli, PhD | 2016 - 2018 |
| 5. Hita Moudgayla, MD | 2018-present |
| 6. Imad Tarhoni, MD, PhD | 2019 - present |

Membership on student thesis committees (Note: * served as committee chair or ** ex officio)

Master’s Students

- | | |
|--|-------------|
| 1. Ahmad H. Othman, BS (Pratap, mentor) | 2014 - 2015 |
| 2. Satnam Brar, BS (Abukhdeir, mentor)* | 2014 - 2016 |
| 3. Amber O. Orcutt, BS (Berry-Kravis, mentor)* | 2015 - 2017 |
| 4. Tamara Alkruidi (Marzo, mentor) | 2017 - 2018 |
| 5. Molly Murnane (Abukhdeir, mentor)* | 2017 – 2018 |
| 6. Karolina M. Goryl (Marzo, mentor) | 2018 - 2019 |

Doctoral Students

- | | |
|--|-------------|
| 1. Sherene Panicker, BS (Biochemistry; Oegema, mentor) | 2005 - 2008 |
| 2. Vivek Shah, BS (Biochemistry; Thonar, mentor) | 2006 - 2008 |
| 3. Casey A. Frankenberger, BA (Biochemistry; Oegema, mentor) | 2006 - 2010 |
| 4. Hyun-Hee Kim, BS (Biochemistry; Schmid, mentor) | 2007 - 2010 |
| 5. Saurabh Khasnavis, BS (Biochemistry; Pahan, mentor)* | 2009 – 2012 |

6. Adam Yanke, MD (Biochemistry; Chubinskaya, mentor)	2009 - 2018
7. Katherine Solka, BS (Biochemistry; Schmid, mentor)	2013 - 2015
8. Grant Corbett, BS (Biochemistry; Pahan, mentor)*	2013 - 2015
9. Arunava Ghosh, BS (Biochemistry; Pahan, mentor)*	2014 - 2015
10. Batzaya Davaadelger, BS (Anatomy & Cell Biology; Maki, mentor)	2014 - 2016
11. Ricardo Perez, BS (Anatomy & Cell Biology; Maki, mentor)	2015 - 2018
12. Sujoti Chandra, BS (Biochemistry; Pahan, mentor)*	2014 - 2019
13. Brittany M. Wilson, BS (Anatomy & Cell Biology; Sumner, mentor)	2016 - 2019
14. Xiaobo Li, BS (Biochemistry; Gupta, mentor)*	2015 - 2019
15. Dhruv Patel, BS (Biochemistry; Pahan, mentor)*	2015 - 2019
16. Andrew Armstrong, BS (IBS; Bishehsari, mentor)*	2017 - 2020
17. Kelly M. Cagin, BS (IBS; Berry-Kravis, mentor)*	2017 - present
18. Ayaat Dehleh, BS (IBS; Rossi, mentor)**	2018 - present
19. Ahmad Othman, MS (IBS; Pratap, mentor)*	2018 - present
20. Marco Rossi, MS (IBS; Zloza, mentor)*	2018 - present
21. Sarah Calhoun (IBS; Maki, mentor)**	2019 - present

Doctoral Candidates Trained (Primary Mentor)

1. Imad Tarhoni, MD (Biochemistry)	2014 - 2019
2. Gabriela Lobato, BS (Biochemistry)	2011 - 2020!
3. Cristina Fhied, MS (Health Sciences)	2015 - present
4. Ibtihaj Fughhi, MD (Integrated Biomedical Sciences)	2018 - present
5. Claire Auger, BS (Integrated Biomedical Sciences)	2019 - present

Master Candidates Trained (Primary Mentor)

1. Reem Karmali, MD (Clinical Research)	2011 - 2012
2. Tenisha West, BS (Medical Laboratory Science)	2012 - 2013
3. Imad Tahoni, MD (Biochemistry)	2013 - 2014
4. Rutvin Patel, MD (Clinical Research)	2013 - 2014
5. Howide H. Eldib, MD (Biochemistry)	2014 - 2016
6. Darin D. Bagar (Integrated Biomedical Sciences)	2018 - 2020

SCIENTIFIC AND SCHOLARLY ACTIVITIES

Reviewer for Funding Agencies

- Department of Defense - The Joint Science and Technology 2/2009
- Office for Chemical and Biological Defense
- The Government of the Hong Kong Special Administrative Region 2012 - 2016
 - Health and Medical Research Fund
 - Food and Health Bureau, Government Secretariat
- Battan Disease Support and Research Association 8/2012; 8/2014
 - Biomarkers Review Section
- NCI Small Business Innovation Research (SBIR) Program 3/2012, 3/2013
 - Topic 277 - Development of Companion Diagnostics
- LUNGeivity Foundation 8/2014
- NCI Omnibus R03 and R21

- Special Emphasis Review Panel 4/2016
- A Breath of Hope Lung Foundation 5/2016
 - Review for 2016 Research Fellow awards
- NCI Special Emphasis Panel - U01/UM1 3/2019
 - Biomarkers Section

Reviewer (invited) for Professional Journals

- Journal of Proteome Research (5 articles total) 2008 – present
- Cancer Prevention Research (3 articles total) 2010 – present
- Journal of Thoracic Oncology (3 articles total) 2010 – 2013
- Cancer Biomarkers (1 article total) 2010
- Clinical Lung Cancer (2 articles total) 2011 – 2012
- Tumor Biology (4 articles total) 2012 – present
- Journal of Rheumatology (1 article total) 2012
- Clinical and Experimental Metastasis (1 article total) 2013
- Journal of Translational Medicine (1 article total) 2013
- Science – Translational Medicine (1 article total) 2013
- Annals of Thoracic Surgery (4 articles total) 2013 - present
- PLOS ONE (3 articles total) 2013 – 2017
- Toxicology Reports (1 article total) 2014
- International Journal of Cancer (4 articles total) 2014 - present
- Clinical Proteomics (5 articles total) 2014 – present
- BMC Cancer (8 articles total) 2015 – present
- Oncotarget 2017 - present
- International Journal of Biological Markers (3 articles) 2017 - present

Editor for Professional Journals

- PLOS ONE 7/2018 – present
- Cancers 1/2019 - present

Consulting Positions

- Rationale Vaccines, Inc 2018 - present
- Integrated Diagnostics, Incorporated. 2014-2018
- MilliporeSigma 2105 - present
- EMD Millipore Corp. 2010-2015
- Millipore Corp. 2008-2010

Community Service

- Scientific Adviser; ACS – Cancer Action Network, Lobby day 2011 9/2011

PROFESSIONAL AFFILIATIONS

- American Society of Biochemistry and Molecular Biology (ASBMB) 2012 – present
- Human Proteome Organization (HUPO) 2009 – present
- International Association for the Study of Lung Cancer (IASLC) 2009 – present
- American Society of Clinical Oncology (ASCO) 2009 - present
- American Association for Cancer Research 2006 - present
- American Society for Mass Spectrometry 2005 - present
- Association of Biomolecular Resource Facilities 2002 - present
- American Chemistry Society 1988 – present
- American Society for Mass Spectrometry 2005 – 2016
- American Association for the Advancement of Science 1997 – 2006
- Association of Biomolecular Resource Facilities 2002 – 2016
- Orthopedic Research Society (ORS) 2002 – 2007

PROFESSIONAL SERVICE

- **Empowering the Biological Interpretation of Combined Variant and Expression Datasets: Genomics Workbench, Ingenuity Variant analysis, and Ingenuity Pathway Analysis.** October 10th, 2014. Rush University Medical Center (Host; Co-organizer with Dr. Mindy Luce, Qiagen Corp.)
- **Simple Quantitative Strategies for Proteomics and Metabolomics.** November 28th, 2012. Rush University Medical Center. (Host and co-organized with Dr. Scott Harder)
- **New Developments in Clinical Research and Forensic Toxicology using LC/MS/MS.** October 25th, 2012. Field Auditorium, Rush University Medical Center. (Host; Co-organizer with Dr. Scott Harder, AB Sciex Corp)
- **Quantitative Solutions for Integrative Biology using the Luminex Platform.** November 8th, 2012. Rush University Medical Center. (Host; Co-organizer with Marc Denn, EMD Millipore, Corp.)
- **New Developments in Clinical Research and Forensic Toxicology using LC/MS/MS.** March 29th, 2012. Rush University Medical Center. (Host; Co-organized with Dr. Scott Harder, AB-Sciex Corp.)
- **Planet xMAP, series 2011: Chicago.** June 15-16th, 2011. Rush University Medical Center. (Host, co-organizer, and session moderator).
- **The 38th Annual Midwest Connective Tissue Workshop.** May 8-9th, 2010. Rush University Medical Center. (Co-Organized with Drs. Anne-Marie Malfait and Thomas G.H. Diekwisch; Hosted by Dr. Theodore R. Oegema, Jr.).
- **Protein Biomarker Analysis Using Luminex Immunobead Assays.** May 15th, 2008. Rush University Medical Center. (Host; co-organized with Stacey Fellers, Millipore Corp.)
- **The 43rd Annual Congress of the International Society of Oncology and Biomarkers (ISOBM).** Member of the scientific committee and co-organizer. September 1st - 6th, 2016. Chicago, IL. (Host: James A. Radosevich, PhD; Congress President).
- **Novel Approaches for Ultra-Sensitive Protein Detection and Quantification.** July 18th, 2019. Rush University Medical Center. (Host; Co-organizer with Dr. August Barboza, MilliporeSigma Corp.)

Invited Presentations at Regional, National, and International Meetings

1. **Synthesis and Application of a Glycopeptide Derived from the Proteoglycan Linkage Structure.** Jeffrey A. Borgia, Theodore R. Oegema Jr. and Gregg B. Fields. The 16th American Peptide Symposium. Minneapolis, MN. June 26th-July 1st, 1999.
2. **A Kinase is Responsible for the Phosphorylation of Chondroitin Sulfate-Initiated Xylose.** Jeffrey A. Borgia and Theodore R. Oegema Jr. The 46th Annual Orthopedic Research Society (ORS) Meeting. Orlando, FL. March 11th-15th, 2000.
3. **Native and Semi-Native Zymography of Matrix Metalloproteinases.** Jeffrey A. Borgia, Mohammad Al-Ghoul and Gregg B. Fields. Spring meeting of the Florida Chapter; American Chemical Society. Orlando, FL. May 12th-13th, 2000.
4. **The Phosphorylation of Proteoglycan Linkage Structures by a Specific Kinase.** Jeffrey A. Borgia, and Theodore R. Oegema Jr.; Gordon Conference – Proteoglycans. July, 2000.
5. **Modulation of Matrix Metalloproteinase (MMP) Levels in Melanoma Cells Exposed to “Mini-Collagen” Ligands.** Borgia, J; Lauer-Fields, J; and Fields, G B. Experimental Biology 2001, Orlando, FL. March 29th-April 4th, 2001.
6. **Glycosylation of “Mini-Collagens” Modulates Melanoma Adhesion, Spreading, and Metalloproteinase Production.** The 48th Annual Orthopedic Research Society (ORS) Meeting. Dallas, TX. February 10th-13th, 2002.
7. **Modulation of Matrix Metalloproteinase (MMP) Levels in Melanoma Cells Exposed to “Mini-Collagen” Ligands.** Borgia, J; Lauer-Fields, J; and Fields, G B. The 48th Annual Orthopedic Research Society (ORS) Meeting. Dallas, TX. February 10th-13th, 2002.
8. **Early Responses to Oral Glucosamine Therapy in a Papain-Induced Mouse Model of Joint Damage and Repair.** Jeffrey A Borgia, Sherene S Panicker, Cristina Fhied, Theodore R Oegema. The Midwest Connective Tissue Workshop. Chicago, IL. November 4th-5th, 2005.
9. **Biomarker discovery in endometrial carcinoma using novel proteomic methods.** S. E. McCormack, C. Frankenberger, K. A. Kaiser, L. Usha, J. Rotmensch, J. S. Coon., and J. A. Borgia, Rush University Research Forum. Chicago, IL, April 5-6, 2006.
10. **Glucosamine impacts the serum proteome in a mouse model of joint damage and repair.** Jeffrey A Borgia, Sherene S Panicker, Cristina Fhied, Theodore R Oegema. Rush University Research Forum. Chicago, IL, April 5-6, 2006.
11. **Biomarker discovery in endometrial carcinoma using novel proteomic methods.** J. A. Borgia, C. Frankenberger, S. E. McCormack, K. A. Kaiser, L. Usha, J. Rotmensch, J. S. Coon. *Journal of Clinical Oncology*, 2006 ASCO Annual Meeting Proceedings Part I. Vol 24, No. 18S (June 20 Supplement), 2006: 5034.
12. **Discovery of serum biomarkers for squamous cell lung carcinoma using novel proteomic methods.** Jeffrey A. Borgia, Xiaolong He, Rekha Kempegowda, William Beck, and John Coon. AACR Annual meeting 2007. Los Angeles, CA, April 14-18, 2007.
13. **Alteration of the cellular proteome upon inhibition of polypyrimidine-tract binding protein expression.** Jeffrey Borgia, Xiaolong He, Rekha Kempegowda, William Beck, and John Coon. AACR Annual meeting 2007. Los Angeles, CA, April 14-18, 2007.
14. **Serum biomarker discovery for ovarian serous carcinoma using novel proteomic methods.** J. A. Borgia, C. Frankenberger, K. Kaiser, S. E. McCormack, L. Usha, J. Rotmensch, J. S. Coon. *Journal of Clinical Oncology*, 2007 ASCO Annual Meeting Proceedings Part I. Vol 25, No. 18S (June 20 Supplement), 2007: 16058.

15. **A serum proteomic analysis of lung squamous cell carcinoma.** Borgia, Jeffrey A.; Frankenberger, Casey; Basu, Sanjib; Kaiser, Kelly A.; McCormack, Shannon E.; Faber, L P.; Liptay, Michael J.; Bonomi, Philip D.; Coon, John S.. Journal of Thoracic Oncology. 2(8):S511-S512, August 2007. (Proceedings from the 11th World Conference on Lung Cancer. September 2-6, 2007)
16. **Molecular Staging of NSCLC using tumor specific autoantibodies.** Kalpa Patel, Andres Jaramillo, John Coon, Michael Liptay, Anthony Kim, L. Faber, Philip Bonomi, and Jeffrey A. Borgia. AACR Annual meeting 2008. San Diego, CA, April 12-16th, 2008.
17. **Biopathwiki: An interactive, web-based collaborative pathway repository based on java and wiki technology.** Casey Frankenberger, David Decresce, Kalpa Patel, John Coon, Theodore Oegema, and Jeffrey A. Borgia. AACR Annual meeting 2008. San Diego, CA, April 12-16th, 2008.
18. **Insulin-like growth factor binding proteins and response in advanced non-small cell lung cancer (NSCLC) patients treated with erlotinib.** M.J. Fidler, A. Gimelfarb, I. Dehghan-Paz, S. Basu, C. Fhied, K.A. Kaiser-Walters, E.C. Farlow, O. Rouhi, M. Batus, J.S. Coon, P. Bonomi, J.A. Borgia. The 13th World Conference on Lung Cancer. San Francisco, CA, July 31-August 4th, 2009.
19. **The use of Tumor-specific Auto-antibodies as a Possible Early Detection Screening Tool for Non-small Cell Lung Cancer.** Erin C. Farlow, Kalpa Patel, Anthony W. Kim, Bao-Shiang Lee, Sanjib Basu, Michael J. Liptay, L. Penfield Faber, Philip Bonomi, William H. Warren, John S. Coon, and Jeffrey A. Borgia. The 13th World Conference on Lung Cancer. San Francisco, CA, July 31-August 4th, 2009.
20. **Immunohistochemistry of biomarkers associated with metastatic and cancer stem cell-like phenotypes in non-small cell lung cancer.** Omid Rouhi, Kelly A Kaiser-Walters, Diana Escarzaga, Danielle Steker, Sanjib Basu, Anthony W. Kim, Michael J. Liptay, L. Penfield Faber, Philip Bonomi, John S. Coon, Jeffrey A. Borgia. The 13th World Conference on Lung Cancer. San Francisco, CA, July 31-August 4th, 2009.
21. **Rational selection of biomarkers to help direct erlotinib treatment for advanced non-small cell lung cancer (NSCLC).** Borgia J.A., Frankenberger C, Basu S, Rouhi O, Fidler M.J, Batus M, Fhied C.L, Dalovisio A.P, Lie W.R, Masheshwari R, Hayes D, Coon J, Bonomi P. (2011, April) Poster presented at: the American Association of Cancer Research Annual Meeting; Orlando, FL.
22. **Technical Validation Study of a Multi-Analyte Serum Panel for Lung Cancer Detection.** Jeffrey A. Borgia, David D. Shersher, Michael M. Vercillo, Brett Mahon, Cristina Fhied, Sanjib Basu, Penfield L. Faber, William H. Warren, and Michael J. Liptay. 14th World Congress on Lung Cancer. July 3-7th, 2011 Amsterdam, The Netherlands.
23. **Serum Biomarkers for Apoptosis for prognosticating progression-free and overall outcomes in advanced non-small cell lung cancer (NSCLC).** Jeffrey A. Borgia, Reem Karmali, Mary Jo Fidler, Sanjib Basu, Brett Mahon, Omid Rouhi, David D. Shersher, Cristina Fhied, Kelly A. Kaiser, Marta Batus, and Philip Bonomi. 14th World Congress on Lung Cancer. July 3-7th, 2011. Amsterdam, the Netherlands.
24. **Prognostic value of O-GlcNAc modification and its related enzymes in lung adenocarcinoma.** Rouhi O, Arvanitis L, Kaiser K, Sanjib B, Mahon B, Pool M, Liptay M, Bonomi P, Borgia J.A. United States and Canadian Academy of Pathology (USCAP); British Columbia, Canada. March, 2012.
25. **Circulating biomarkers may help guide selection of erlotinib versus chemotherapy in pretreated advanced NSCLC patients.** Jeffrey A. Borgia, PhD; Mary J Fidler, MD, Anjali Gangaram, MD, Sanjib Basu, PhD, Cristina Fhied, Kelly A. Kaiser-Walters, BS, Brett Mahon, MD,; and Philip Bonomi, MD. The 15th World Congress on Lung Cancer. October 27th-31st, 2013. Sydney, Australia.
26. **Development of a serum biomarker panel predicting clinical outcome of chemotherapy with Alimta in patients with NSCLC.** Jeffrey A. Borgia, PhD; Mary J Fidler, MD; Shruthi Melinamani,

- MD; Ravi Pithadia, MD; Sanjib Basu, PhD; Cristina Fhied, MS; Brett Mahon, MD; and Philip Bonomi, MD. The 15th World Congress on Lung Cancer. October 27th-31st, 2013. Sydney, Australia.
27. **Prognostic value of circulating angiogenesis biomarkers in rapidly progressing NSCLC.** Jeffrey A. Borgia, PhD; Cristina Fhied, MS; Sanjib Basu, PhD; Ravi Pithadia, MD; Mary J. Fidler, MD; Marta Batus, MD; Mark Pool, MD; Zahraa Ibrahim, MD; and Philip Bonomi, MD. The 3rd AACR-IASLC Joint Conference on the Molecular Origins of Lung Cancer. San Diego, California. January 6-9, 2014.
 28. **Prognostic Value of Hepatocyte Growth Factor (HGF) and Angiogenic Biomarkers in Advanced Non-Small Cell Lung Cancer (NSCLC).** Jeffrey A. Borgia, PhD; Ravi Pithadia, MD; Zahraa Ibrahim, MD; Cristina Fhied, MS; Sanjib Basu, PhD; Wen-Rong Lie, PhD; Mary J. Fidler, MD; Marta Batus, MD; and Philip Bonomi, MD. *The 50th Annual Meeting of the American Society of Clinical Oncology*. May 30th-June 4th, 2014. McCormick Place, Chicago, IL.
 29. **“Circulating Angiogenesis Biomarkers are Associated with Disease Progression in Lung Adenocarcinoma”** Oral presentation at the Society of Thoracic Surgeons 50th Annual Meeting, Orlando, Florida, January 25-29, 2014.
 30. **“Insulin-like Growth Factor-1 and its Associated Binding Proteins Vary across Stages of Non-Small Cell Lung Cancer”** Oral presentation at the American Association for Thoracic Surgery Annual Meeting, April 26-30, 2014.
 31. **A Model Incorporating Clinical, Radiographic, and Biomarker Characteristics Predicts Malignancy in Indeterminate Pulmonary Nodules.** Christopher W. Seder, Maria D. Martin, Palmi N. Shah, Xuanji Wang, Ravi Pithadia, Sanjib Basu, Cristina Fhied, Gary W. Chmielewski, William H. Warren, Michael J. Liptay, and Jeffrey A. Borgia. The 16th World Congress on Lung Cancer. September 6-9th, 2015. The Colorado Convention Center. Denver, CO.
 32. **“Characterization of indeterminate pulmonary nodules using a novel algorithm incorporating clinical, radiographic and serum biomarker profiles”** Oral Presentation at the Southern Thoracic Surgical Association 62th Annual Meeting, Orlando, Florida, November 4-7, 2015.
 33. **“Serum-Based Biomarker Panel May Predict Recurrence in Resected Node Negative Non-Small Cell Lung Cancer < 4 cm in Size”** Oral Presentation at the Southern Thoracic Surgical Association 63th Annual Meeting, Naples, Florida, November 9-12, 2016.
 34. **“IGF-1 Induces Phenotypic Trans-differentiation in Lung Adenocarcinoma Cell Lines and Associated Modifications in Metabolic Regulation”** 31th Annual General Thoracic Surgical Club Meeting, Dove Mountain, Arizona, March 12-15, 2018
 35. **“PD-L1 Expression <1% is Associated with Improved Anti-Neoplastic Response to Metformin in Resected, Early-Stage NSCLC”** Poster presentation at Society of Thoracic Surgeons 54th Annual Meeting, Fort Lauderdale, Florida, January 27-31, 2018.
 36. **Associations Between Baseline Serum Biomarker Levels and Cachexia/Pre-Cachexia in Pretreated Non-Small Cell Lung Cancer (NSCLC) Patients.** Oral Presentation at the IASLC 2019 World Congress on Lung Cancer; Barcelona, Spain. September 7th-10th, 2019.

Invited Seminars and Lectures

1. **Biomarker Discovery in NSCLC: An Integrative Approach.** Abbott Global Pharmaceutical Research and Development, North Chicago, IL. June 7th, 2006.
2. **Early Responses to Oral Glucosamine Therapy in a Papain-Induced Mouse Model of Joint Damage and Repair.** The Midwest Connective Tissue Workshop. Rush University Medical Center. Chicago, IL. August 15th, 2006.
3. **Biomarker Discovery for NSCLC: Current approaches.** Abbott Molecular, Des Plaines, IL. February 6th, 2007.

4. **Autoantibody Discovery using SEREX Technology.** Abbott Molecular, Des Plaines, IL. February 6th, 2007.
5. **Glucosamine Impacts the Serum Proteome in a Mouse Model of Joint Damage and Repair.** The 53rd Annual Orthopedic Research Society (ORS) Meeting. San Diego, CA. February 13th, 2007.
6. **A New Paradigm for Glucosamine Action in OA?** The Midwest Connective Tissue Workshop. Rush University Medical Center. Chicago, IL. March 15th, 2007.
7. **Innovations in Diagnostic Test Development for Non-Small Cell Lung Cancer.** Planet xMAP – Europe. Amsterdam, Netherlands. September 27th 2007.
8. **Diagnostic Blood-Test Development for Non-Small Cell Lung Cancer.** Presentation to the Board of Directors, Wadsworth Foundation. Chicago, IL. October 15th, 2007.
9. **Staging Panel Development for NSCLC.** Abbott Global Pharmaceutical Research and Development, North Chicago, IL. December 7th, 2007.
10. **Diagnostic Blood-Test Development for Non-Small Cell Lung Cancer.** Grand Rounds – Hematology and Medical Oncology. Rush University Medical Center, Chicago, IL. July 23rd, 2008.
11. **A Systems Biology Approach to Treatment Selection for Non-Small Cell Lung Cancer Patients.** Planet xMAP - USA. Baltimore, MD. May 9th, 2010.
12. **The Systems Biology Approach to Biomarker Discovery in Lung Cancer.** Presentation to the Scientific Board, Biodesix Corp., Boulder, CO. September 18th, 2012.
13. **Diagnostic Test Development for Lung Cancer: Peripheral Blood.** The Rush University Cancer Center - Retreat. September 27th, 2012.
14. **Early Lung Cancer Detection using Luminex Immunobead Assays.** Planet xMAP 2012 – Europe. Monaco. October 9th-12th, 2012.
15. **Diagnostic Test Development for Non-small Cell Lung Cancer.** Pathology Seminar Series: Rush University Medical Center. Chicago, IL. July 7th, 2013.
16. **The Role of Epithelial-to-Mesenchymal Transition (EMT) in the Progression and Management of Non-small Cell Lung Cancer.** Grand Rounds: Internal Medicine. Rush University Medical Center. Chicago, IL. July 25th, 2013.
17. **The Rush Lung Cancer Biorepository (and beyond): 10 years of biobanking in the Rush Cancer Center.** The Rush University Cancer Center – Translational Research Featured Presentation. February 24th, 2014.
18. **Improved Treatment Selection Algorithms in NSCLC using Circulating Protein Biomarkers.** The University of Illinois at Chicago, Cancer Center Grand Rounds. Chicago, IL May 29th, 2014.
19. **Improved Treatment Selection Algorithms in NSCLC using Circulating Protein Biomarkers.** Presentation to the Scientific Advisory Committee, Integrated Diagnostics, Inc. Half Moon Bay, CA. September 9th, 2014.
20. **Development of a Companion Blood Test for Lung Cancer Screening.** Presentation to the Tumor Board. Rush Riverside Medical Center. Kankakee, IL. November 8th, 2014.
21. **Biomarker Development in Advanced-stage Non-small Cell Lung Cancer.** Pathology Seminar Series: Rush University Medical Center. Chicago, IL. May 6th, 2015.
22. **The Road to New Diagnostics; Blood, Sweat and Infrastructure.** Scientific Leadership Committee, Rush University Medical College. Chicago, IL. October 13th, 2015.
23. **Circulating Signatures of Aggressive Non-small Cell Lung Cancer.** Division of Hematology, Oncology and Cell Therapy Grand Rounds. Rush University Medical Center. Chicago, IL. January 27th, 2016.
24. **Serum Biomarkers Associated with Disease Progression in Non-small Cell Lung cancer.** Rush Thoracic Surgery's 2017 L. Penfield Faber Visiting Professor series – Case Presentations. Rush University Medical Center. Chicago, IL., May 23rd, 2017

25. **Circulating protein biomarker development for non-small cell lung cancer: strategic use of the Rush University Biorepository.** Abbott Laboratories. Abbott Park, IL. 12/11/2017
26. **The Potential Role of Molecular Diagnostics in the Emerging Paradigm of Lung Cancer Screening.** Grand Rounds – Pulmonology; Riverside Medical Center. 1/17/2018
27. **Efforts Towards the Development of Blood Tests to Improve Treatment Decisions for NSCLC Patients.** Loyola University Chicago – Stritch School of Medicine. 2/22/2018
28. **Novel Diagnostic Blood Test Development to Improve Treatment Decisions in NSCLC.** The Gastrointestinal Comprehensive Clinical Research Meeting. Rush University Medical Center. Chicago, IL. 6/19/2018

Funding History of Peer-Reviewed Grants (NIH, Professional Foundations)

Current

1. **National Cancer Institute (R21) R21CA223335**
 “Targeted proteomics to aid in the management of patients with stage IA lung adeno”
 Purpose: The goal of this project is to develop a series of biomarkers prognostic for disease recurrence in stage IA lung adenocarcinoma using targeted proteomics.
 4/1/2018-3/31/2020 (on 1-year no-cost extension)
 Status: Active
2. **National Cancer Institute; 1 RO1 CA223490-01**
 Role: Principal Investigator, Rush site (Y. Deng – PI)
 “Profiling genome-wide circulating ncRNAs for the early detection of lung cancer”
 7/2019 – 6/2024
 Status: Active
3. **National Cancer Institute; 1R01 CA230778-01**
 Role: Principal Investigator, Rush site (T. Shimamura – PI)
 “Investigation of CXCR7 signalling in EGFR TKI resistant NSCLC”
 9/2019 – 7/2024
 Status: Active
4. **National Institutes of Health; 1 UM1-NS112874-01**
 Transition from Acute to Chronic Pain in Total Knee Arthroplasty Patients: Identifying Resilience and Vulnerability Profiles. (Mechanism RFA-RM-18-034: Multisite Clinical Center Common Fund Acute to Chronic Pain Signatures Program: Acute Peri-operative Pain (UM1 Clinical Trial Optional))
 Role: Consultant (J. Burns – PI)
 8/2019-7/2022
 Status: Funded, Active
5. **Swim Across America**
 Role: Principal Investigator
 “Radioproteomic profiling to improve prognostication in stage I NSCLC”
 6/1/2020 – 5/31/2021
 Status: Waiting for IRB approval
6. **Swim Across America**
 Role: Co-Investigator (PI- Carl Maki)
 “Targeting histone demethylases in non-small cell lung cancer”
 6/1/2020 – 5/31/2021

Status: Active (no salary; biospecimen acquisition support only)

Pending or Applied for

1. **Walder Foundation**
Role: Co-Investigator (PI – Jeffrey Schneider)
“Characterizing the broadly neutralizing antibody response in SARS-CoV-2 infected individuals”
8/2020-7/2021
\$473,414 Total award (\$411,664 Total Directs)
Finalist in competition as of 8/27/2020
2. **National Cancer Institute – R21**
Role: Key personnel (PI – Jitesh Pratap)
“Targeting autophagy in metastatic bone disease”
7/2020 – 6/2022 (submitted 2/2020; not discussed)
3. **National Cancer Institute – R01**
Role: Key personnel (PIs – Jitesh Pratap/ Carl Maki)
“Regulation of endosomes via microtubules in bone metastasis”
2/2021 – 1/2026 (submitted 6/2020; review – 10/2020)
4. **National Cancer Institute – R01**
Role: Co-Investigator (PI – Carl Maki)
“Targeting Jumonji Domain Histone Demethylases in non-small cell lung cancer”
5% effort; Anticipated award \$2,138,559 (In review)
5. **Department of Defense**
Role: Co-Investigator (PI – Carl Maki)
“Novel therapeutic targeting of triple negative breast cancer”
10% effort; anticipated award \$1,569,999 (in review)
6. **Department of Defense**
Role: Co-Investigator (PI – Carl Maki)
“Targeting histone demethylases in non-small cell lung cancer”
10% effort; anticipated award \$605,944 (in review)
7. **National Cancer Institute – R01**
Role: Key personnel (PIs – Jitesh Pratap/ Carl Maki)
“Regulation of endosomes via microtubules in bone metastasis”
2/2021 – 1/2026 (submitted 6/2020; review – 10/2020)
8. **National Cancer Institute – R01 (1R01CA241557-01A1)**
Role: Subcontract PI (PI – Takeshi Shimamura)
“Role of Endothelin 1 in EGFR TKI Resistance”
7/2020 – 6/2025 (scored 22nd percentile; resubmission – 10/2020)
\$1,614,371 Total Directs; 10% effort
9. **Department of Defense – Concept Award**
Role: Key personnel (PI – Takeshi Shimamura)
“Targeting metabolic vulnerabilities associated with LKB1 mutations in lung cancer”
\$100,000; support for biospecimen acquisition

Completed

- 1. National Cancer Institute; Tissue Source Site (TSS)**
Role: Principal Investigator
“Collaboration with the Lung Cancer Driver Discovery Project (CDDP)”
Purpose: Approximately 200 cases of lung adenocarcinoma will be provided to the CDDP investigators as a sub-contract.
6/1/2018 – 5/31/2019
- 2. National Institute of Arthritis and Musculoskeletal and Skin Diseases (RO1)**
Role: Co-Investigator (R. Sumner; PI)
Detection and Treatment of Peri-Implant Osteolysis
4/1/2015-3/31/2020
Status: Active
- 3. Swim Across America**
Role: Co-Investigator (Seder, C; PI)
“Do tumor organoid cultures developed from lung cancer patients model the clinical, functional, and molecular characteristics of primary tumor specimens?”
8/1/2018 – 10/31/2019
Status: Active
- 4. Swim Across America**
Role: Principal Investigator
“Autoantibodies associated with PD-1 immune checkpoint toxicity in lung cancer”
8/1/2018 – 10/31/2019
Status: Active
- 5. Swim Across America Foundation**
Role: Principal Investigator
“Support for the Rush University Cancer Center Biorepository – 2017”
8/1/2017 – 7/31/2018
- 6. Swim Across America, 2016 Pilot Project Award**
Role: Principal Investigator
“Toward precision radiotherapy for lung adenocarcinoma: measurement of metformin radiosensitization and development of a multi-gene signature in patient-derived cell line models”
7/1/2016 – 6/30/2017
- 7. Swim Across America, 2016 Pilot Project Award**
Role: Principal Investigator
“Support for the Rush University Cancer Center Biorepository Thoracic Oncology Initiative”
7/1/2016 – 6/30/2017
- 8. Elsa U. Pardee Foundation**
Role: Principal Investigator (transferred from R. Karmali)
“Reprogramming Cancer Metabolism: Improving Therapy Options with Metformin in C-myc+ Lymphomas”.
3/2016 – 3/2017
- 9. Agilent Global Academic Research Support Program**
Role: Principal Investigator

10. Respiratory Health Association.

Role: Principal Investigator

A Retrospective Study of Epidermal Growth Factor (EGFR), Epithelial to Mesenchymal (EMT), Downstream EGFR, and Alternate Growth Pathways Molecular Markers in Patients with Advanced Non-small Cell Lung Cancer Treated with Erlotinib.

5/18/2015 – 7/16/2016

11. Cures Within Reach Foundation

Role: Principal Investigator

“Validation of a companion blood test for low-dose CT-based screening protocols “

Purpose: The object of this project is to evaluate a blood test we have developed against a larger array of patients at high risk for lung cancer with positive thoracic CT findings.

9/1/2014 – 6/30/2016

12. Department of Internal Medicine, Rush University

Role: Co-Investigator (R. Karmali, PI)

“Reprogramming Cancer Metabolism: Improving Therapy Options with Metformin in C-myc+ Lymphomas”.

Purpose: To determine whether DLBCL patient subsets with c-myc activation, (including the “double-hit” (DH) and “double protein expressor” (DP) cases) stand to derive clinical benefit from alterations in tumor metabolism achieved through exposure to metformin.

7/1/2015 – 6/30/2016

13. Swim Across America Foundation

Role: Principal Investigator

“An Integrative Secretomic Analysis of Recurrence in Lung Adenocarcinoma“

Purpose: The object of this project is to develop a novel blood test capable of prognosticating disease recurrence in stage I lung adenocarcinoma.

11/1/2014 – 3/31/2016

14. Department of Internal Medicine, Rush University

Role: Co-Investigator (M. Fidler, PI)

“Evaluating the relationship of serum biomarkers and cancer cachexia as defined by CT scan muscle mass/density muscle mass”.

Purpose: to evaluate clinical and molecular biomarkers of early cancer cachexia in advanced NSCLC patients. 12/1/2014 – 2/28/2016

15. Agilent Global Academic Research Support Program

Role: Principal Investigator

9/16/2014

16. Swim Across America Foundation

Role: Principal Investigator

“Acquisition of instrumentation to permit targeted proteomics at RUMC“

Purpose: The object of this project is acquire instrumentation to help support advanced proteomic analyses at RUMC.

4/1/2014 – 3/31/2015

17. Washington University – National Cancer Institute.

Role: Principal Investigator

“Tissue Source Site (TSS) Networks in Support of The Cancer Genome Atlas Program“.

Purpose: The objective of this subcontract is to serve as a source of lung cancer specimens for The Cancer Genome Atlas Program.

3/2012 – 6/2015

18. Lungevity Foundation

Role: Principal Investigator

“Autoantibody-based biomarkers to aid in the early diagnosis of lung cancer “

Purpose: The object of this proposal is to identify serum biomarkers that can discern the identity of nodules detected by CT-based screening protocols.

9/1/2011 – 12/31/2013

19. American Cancer Society, Illinois Chapter

Role: Principal Investigator

“A blood test to identify surgical NSCLC patients with occult disease”

Purpose: The objectives of this award are to define a serum test for predicting outcome for patients with resected NSCLC.

9/1/2011-8/31/2013

20. Respiratory Health Association of Metropolitan Chicago

Role: Principal Investigator

“Molecular signatures to predict response in neoadjuvant chemoradiation therapy of Stage III NSCLC patients”.

Purpose: The objective of this grant is to test the hypothesis that molecular markers of Epithelial-to-Mesenchymal Transitions in pre-treatment lymph node tissue can be used to help prognosticate response to chemoradiation therapy in Stage III NSCLC patients.

9/1/2010 - 12/31/2012

21. Illinois Society for the Prevention of Blindness

Role: Co-Principal Investigator

“Alpha-1 antagonist binding affinity to ocular melanin in the pigmented and albino rat”

Purpose: The objective of this project is to develop mass spectrometry-based methodology to quantify the binding of therapeutic agents that contributes to floppy-iris syndrome in elderly patients”.

7/1/2010 – 6/31/2011

22. American Cancer Society, Illinois Chapter

Role: Principal Investigator

“Serum test development to predict NSCLC patient response to erlotinib.”

12/01/2009-11/30/2010

23. LUNGEvity/ Partnership for the Cure Foundations

Role: Principal Investigator

“Diagnostic test development for non-small cell lung cancer”.

Purpose: The objective of this grant is to use proteomic and genomic methods to further refine preliminary panels of biomarkers we developed at RUMC for correctly diagnosing and staging NSCLC patients.

1/2009-12/2010

24. Rush University/ John H. Stroger Hospital Collaborative Research Project

Role: Co-Principal Investigator

“Does administration of vitamin D in African-Americans with hypovitaminosis D and type 2 Diabetes Mellitus improve inflammatory markers of cardiovascular disease?”

Purpose: The purpose of this grant is to assess the associations between vitamin D deficiency and risk for cardiovascular disease in the city of Chicago.

9/2007-8/2008

25. Segal Grant; Women’s Cancer Board Award

Role: Principal Investigator

“Development of novel diagnostic tests to differentiate early ovarian cancer”

Purpose: The primary Aim of this project is to develop novel Luminex-based, multianalyte blood tests to better predict and monitor patient response to first-line chemotherapy for Ovarian Cancer.

9/2007-8/2010

26. Rush University Medical Center (Hasterlik Foundation): “Capital Research Equipment Award”

Role: Principal Investigator

The purpose of this award is to aid in the development of the research environment at Rush University Medical Center. These funds will be used to match the Shimadzu Mass Spec Equipment Grant Program funds for acquisition of the indicated instrumentation.

2007

27. Shimadzu Mass Spec Equipment Grant Program

Role: Principal Investigator

Purpose: Dr. Borgia’s lab was selected to develop novel mass spectral methods using one of the premier mass spectrometers manufactured by Shimadzu. The award provides partial funding for an Axima TOF² Mass spectrometer and a 2-dimensional micro-flow HPLC system, equipped with a MALDI plate autospotter.

2007

Other extramural agencies including industry

Current

1. Pfizer, Inc.

“Development of a Molecular Algorithm to Identify Cachexia in Patients with Advanced NSCLC”.

9/2019 – 3/2021

Total Award - \$315,000

2. Tempus

Role: Principal Investigator

“Restrospective xT testing of Thoracic Malignancies”

7/2018 – 6/2021

3. Tempus

Role: Principal Investigator

“Radiomic Profiling of advanced NSCLC receiving immunotherapy”

6/2019-12/2021

Pending

1. Biodesix Inc.

“Efforts towards the improvement of clinical prognostication in early- and advanced-stage NSCLC using serum blood testing”.

4/2018 – 7/2020

Total Award - \$275,000 (This award is currently pending an amendment for \$150,000)

Completed

1. **Epigenomics, Inc.**
Role: Principal Investigator
“Clinical Sample Protocol for Colorectal Cancer Screening Research & Development”
9/2018 – 12/2019
Total Award - \$175,000
2. **Abbott Diagnostics**
Role: Principal Investigator
“Lung cancer early detection - Panel/algorithm development for indeterminate pulmonary nodule malignancy assessment”
7/15/2018 - 12/31/2018
Total award - \$15,000
3. **Ventana Medical Systems, Inc.**
Role: Principal Investigator
“Biomarker discovery and validation for NSCLC”
6/2013 –12/2018
4. **Tempus**
Role: Principal Investigator
“Cancer Center Biorepository Support”
4/2017 - 4/2019
5. **Biodesix, Inc.**
Role: Principal Investigator
“Veristat companion test development using Luminex testing and histological biomarker correlates in NSCLC”
3/2014 – 12/2017
Total award - \$200,000
6. **Rational Vaccines**
Role: Principal Investigator
“Assay development for HST testing”
5/2018-6/2019
Total Award - \$15,000 (fee per service)
7. **Epigenomics, Inc.**
Role: Principal Investigator
“Circulating epigenomic markers of early-stage NSCLC”.
6/1/2016 – 6/30/2017
7/1/2017 – 6/30/2018 (amendment)
8. **Myriad Genetics, Inc.**
Role: Principal Investigator
“Biomarkers and Classification Signatures Predictive of Outcome in Non-Small Cell Lung Cancer”.
Purpose: The object of this proposal is to identify biomarkers prognostic for disease recurrence in Stage I NSCLC using RNA sequencing.
9/2012 – 8/2014

9. **Integrated Diagnostics, Inc.**
 Role: Principal Investigator
 “Validation Studies for a multianalyte panel to assign clinical significance to indeterminate findings during lung cancer screening”
 12/2014 – 12/2015
10. **Abbott Diagnostics**
 Role: Principal Investigator
 “Evaluation of ACTN4 in the US population”
 1/2013 – 12/2014
11. **EMD Serono (EMD Merck)**
 Role: Principal Investigator
 “Investigations in MUC1-Based Immunotherapy in Non-Small Cell Lung Cancer.
 2012 – 2013
12. **Abbott Diagnostics**
 Role: Co-Principal Investigator
 Genomic Markers of Response to Therapy in Human Cancer
 Purpose: Development of FISH-based molecular diagnostics for the ALK fusion gene.
 2012-2013
13. **Abbott GPRD**
 Role: Co-Principal Investigator
 “High Resolution SNP-Chip analysis of early non-small cell lung cancer”.
 Purpose: The primary objective for this cooperative agreement is to exchange materials and information resulting from a common effort to assess the chromosomal status of patients with NSCLC.
 2007-2009
14. **Abbott Molecular**
 Role: Co-Principal Investigator
 “Proteomic analysis of serum and tumor tissue in non-small cell lung cancer”.
 Purpose: The primary objective for this cooperative agreement is to exchange materials and information resulting from parallel efforts being conducted at both institutions to identify a proteomic signature for early-stage NSCLC.
 2006-2008

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99. Tarhoni I, Wakefield C, Kollipara R, Batus M, Fidler M, Bonomi P, Borgia, JA. **The Use of Neoantigen-specific Autoantibodies to Prognosticate Clinical Outcomes in Advanced Stage NSCLC Patients Receiving PD-1/-L1 Directed Immune Checkpoint Inhibition**. *Journal of Immunological Methods*. (submitted 8/29/2020; in review).

Anticipated Submissions

1. Tarhoni I, Fidler M, Kollipara R, Fughhi I, Gallo K, Batus M, Bonomi P, and Borgia JA. **Associations between soluble immune checkpoint molecules and overall survival in advanced non-small cell lung cancer (NSCLC) patients treated with either anti-PD-1/-L1 monoclonal antibodies or single-agent chemotherapy**. *Cancers*. (anticipated)

Peer-Reviewed Abstracts

1. **Synthesis and Application of a Glycopeptide Derived from the Proteoglycan Linkage Structure**. Jeffrey A. Borgia, Theodore R. Oegema Jr. and Gregg B. Fields. The 16th American Peptide Symposium (APS). Minneapolis, MN. June 26th-July 1st, 1999.
2. **A Kinase is Responsible for the Phosphorylation of Chondroitin Sulfate-Initiated Xylose**. Jeffrey A. Borgia and Theodore R. Oegema Jr. The 46th Annual Orthopedic Research Society (ORS) Meeting. Orlando, FL. March 11th-15th, 2000.
3. **Native and Semi-Native Zymography of Matrix Metalloproteinases**. Jeffrey A. Borgia, Mohammad Al-Ghoul and Gregg B. Fields. Spring meeting of the Florida Chapter; American Chemical Society. Orlando, FL. May 12th-13th, 2000.
4. **The Phosphorylation of Proteoglycan Linkage Structures by a Specific Kinase**. Jeffrey A. Borgia, and Theodore R. Oegema Jr.; Gordon Conference – Proteoglycans. July, 2000.
5. **Modulation of Matrix Metalloproteinase (MMP) Levels in Melanoma Cells Exposed to “Mini-Collagen” Ligands**. Borgia, J; Lauer-Fields, J; and Fields, G B. Experimental Biology 2001, Orlando, FL. March 29th-April 4th, 2001.
6. **Glycosylation of “Mini-Collagens” Modulates Melanoma Adhesion, Spreading, and Metalloproteinase Production**. The 48th Annual Orthopedic Research Society (ORS) Meeting. Dallas, TX. February 10th-13th, 2002.
7. **Modulation of Matrix Metalloproteinase (MMP) Levels in Melanoma Cells Exposed to “Mini-Collagen” Ligands**. Borgia, J; Lauer-Fields, J; and Fields, G B. The 48th Annual Orthopedic Research Society (ORS) Meeting. Dallas, TX. February 10th-13th, 2002.
8. **Glycosylation of Mini-Collagen Modulates Melanoma Cell Adhesion, Spreading, and Metalloproteinase Production**. Janelle L. Lauer-Fields, Jeffrey A. Borgia, and Gregg B. Fields. *Mol. Biol. Cell* 12, 64a (2001). Forty First American Society for Cell Biology (ASCB) Annual Meeting, Washington, D.C., December 8-12, 2001.
9. **The Use of Triple-Helical Peptide Ligands to Dissect Unique Signaling Pathways for Melanoma Cell Receptors During Invasion of the Basement Membrane**. Gregg B. Fields, Jeffrey A. Borgia, Mohammed A. Al-Ghoul, and Janelle Lauer-Fields. *Mol. Biol. Cell* 13, 207a (2002).

Forty Second American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, December 14-18, 2002.

10. **Triple-helical peptide ligand dissection of unique melanoma cell signaling pathways.** Janelle L. Lauer-Fields, Mohammad Al-Ghoul, Diane Baronas-Lowell, Jeffrey A. Borgia, and Gregg B. Fields. In "Peptide Revolution: Genomics, Proteomics & Therapeutics" (T. Sawyer and M. Chorev, Eds.), American Peptide Society, San Diego, CA, pp. 350-352 (2004).
11. **Early Responses to Oral Glucosamine Therapy in a Papain-Induced Mouse Model of Joint Damage and Repair.** Jeffrey A Borgia, Sherene S Panicker, Cristina Fhied, Theodore R Oegema. The Midwest Connective Tissue Workshop. Chicago, IL. November 4th-5th, 2005.
12. **Effects of oral glucosamine on the response of the liver in a papain-injected mouse model of joint damage and repair.** Sherene S. Panicker, Jeffrey A Borgia, Cristina Fhied, Theodore R Oegema. Rush University Research Forum. Chicago, IL, April 5-6, 2006.
13. **Biomarker discovery in endometrial carcinoma using novel proteomic methods.** S. E. McCormack, C. Frankenberger, K. A. Kaiser, L. Usha, J. Rotmensch, J. S. Coon., and J. A. Borgia, Rush University Research Forum. Chicago, IL, April 5-6, 2006.
14. **Glucosamine impacts the serum proteome in a mouse model of joint damage and repair.** Jeffrey A Borgia, Sherene S Panicker, Cristina Fhied, Theodore R Oegema. Rush University Research Forum. Chicago, IL, April 5-6, 2006.
15. **Damaged knee and ankle chondrocytes synthesize more proteoglycans when the IL-1 β signaling pathway is inhibited.** Sherene S. Panicker, Jeffrey A Borgia, Cristina Fhied, Theodore R Oegema. Rush University Research Forum. Chicago, IL, April 5-6, 2006.
16. **Biomarker discovery in endometrial carcinoma using novel proteomic methods.** J. A. Borgia, C. Frankenberger, S. E. McCormack, K. A. Kaiser, L. Usha, J. Rotmensch, J. S. Coon. *Journal of Clinical Oncology*, 2006 ASCO Annual Meeting Proceedings Part I. Vol 24, No. 18S (June 20 Supplement), 2006: 5034.
17. **Damaged Knee and Ankle chondrocytes synthesize more proteoglycans when the IL-1 β signaling pathway is inhibited.** Dawn Franks, Gabriella Cs-Szabo, Nestor Nacionales, Ada Cole, Jeffrey Borgia, Theodore Oegema. The 53rd Annual Orthopedic Research Society (ORS) Meeting. San Diego, CA. February 11th-14th, 2007.
18. **Effects of oral glucosamine on the liver in a papain-injected mouse-model of joint damage and repair.** Sherene S Panicker, Jeffrey A Borgia, Cristina Fhied, Theodore R Oegema. The 53rd Annual Orthopedic Research Society (ORS) Meeting. San Diego, CA. February 11th-14th, 2007.
19. **Discovery of Serum Biomarkers for Squamous Cell Lung Carcinoma using Novel Proteomic Methods.** Kelly A. Kaiser BS, Jeffrey A. Borgia PhD, Casey Frankenberger BS, L. Penfield Faber MD, Shannon E. McCormack BS, Philip D. Bonomi MD, John S. Coon MD, PhD. 24th Annual RUSH University Forum for Research and Clinical Investigation, April 11 -12, 2007; Searle Conference Center; Rush University Medical Center.
20. **Serum Biomarker Discovery for Ovarian Serious Carcinoma using Novel Proteomic Methods.** Shannon E. McCormack BS, Jeffrey A. Borgia PhD, Casey Frankenberger BS, Kelly A. Kaiser BS, Lydia Usha MD, Jacob Rotmensch MD, John S. Coon MD, PhD. 24th Annual RUSH University Forum for Research and Clinical Investigation, April 11 -12, 2007; Searle Conference Center; Rush University Medical Center.
21. **Alteration of the cellular proteome upon inhibition of polypyrimidine-tract binding protein expression.** Rekkha T. Kempgowda MS, Jeffrey A. Borgia PhD, Xiaolong He MS, William T. Beck PhD, John S. Coon MD, PhD. 24th Annual RUSH University Forum for Research and Clinical Investigation, April 11 -12, 2007; Searle Conference Center; Rush University Medical Center.

22. **Cisact: an online tool for aligning multiple upstream genetic regions for the analysis of common cis-acting regulatory sequences.** Casey Frankenberger BS, Vikram Reddy HS, Jeffrey A. Borgia PhD, Theodore R. Oegema PhD. 24th Annual RUSH University Forum for Research and Clinical Investigation, April 11 -12, 2007; Searle Conference Center; Rush University Medical Center.
23. **Glucosamine impacts the serum proteome in a mouse model of joint damage and repair.** Sherene M. Panicker BS, Jeffrey A. Borgia PhD, Nestor A. Nacionales BS, Cristina Fhied MS, Theodore R. Oegema PhD. 24th Annual RUSH University Forum for Research and Clinical Investigation, April 11 -12, 2007; Searle Conference Center; Rush University Medical Center.
24. **Changes in neuromediators, their receptors and catabolic cytokines in acute trauma model of human ankle cartilage.** Thomas Wilson MA, Susan Chubinskaya PhD, Lev Rappoport MD, Jeffrey Borgia PhD, Theodore Oegema PhD, Markus Wimmer BS, Carol Pacione BA, Arnavaz Hakimiyani BS. 24th Annual RUSH University Forum for Research and Clinical Investigation, April 11 -12, 2007; Searle Conference Center; Rush University Medical Center.
25. **Discovery of serum biomarkers for squamous cell lung carcinoma using novel proteomic methods.** Jeffrey A. Borgia, Xiaolong He, Rekha Kempegowda, William Beck, and John Coon. AACR Annual meeting 2007. Los Angeles, CA, April 14-18, 2007.
26. **Alteration of the cellular proteome upon inhibition of polypyrimidine-tract binding protein expression.** Jeffrey Borgia, Xiaolong He, Rekha Kempegowda, William Beck, and John Coon. AACR Annual meeting 2007. Los Angeles, CA, April 14-18, 2007.
27. **Serum biomarker discovery for ovarian serous carcinoma using novel proteomic methods.** J. A. Borgia, C. Frankenberger, K. Kaiser, S. E. McCormack, L. Usha, J. Rotmensch, J. S. Coon. *Journal of Clinical Oncology*, 2007 ASCO Annual Meeting Proceedings Part I. Vol 25, No. 18S (June 20 Supplement), 2007: 16058.
28. **A serum proteomic analysis of lung squamous cell carcinoma.** Borgia, Jeffrey A.; Frankenberger, Casey; Basu, Sanjib; Kaiser, Kelly A.; McCormack, Shannon E.; Faber, L P.; Liptay, Michael J.; Bonomi, Philip D.; Coon, John S.. *Journal of Thoracic Oncology*. 2(8):S511-S512, August 2007. (Proceedings from the 11th World Conference on Lung Cancer. September 2-6, 2007)
29. **Molecular Staging of NSCLC using tumor specific autoantibodies.** Kalpa Patel, Andres Jaramillo, John Coon, Michael Liptay, Anthony Kim, L. Faber, Philip Bonomi, and Jeffrey A. Borgia. AACR Annual meeting 2008. San Diego, CA, April 12-16th, 2008.
30. **Biopathwiki: An interactive, web-based collaborative pathway repository based on java and wiki technology.** Casey Frankenberger, David Decresce, Kalpa Patel, John Coon, Theodore Oegema, and Jeffrey A. Borgia. AACR Annual meeting 2008. San Diego, CA, April 12-16th, 2008.
31. **Molecular Staging of NSCLC using tumor specific autoantibodies.** Kalpa A. Patel PhD, Michael J. Liptay MD, L. Penfield Ferber MD, Anthony Kim MD, Andres Jaramillo PhD, John S. Coon MD, PhD, Philip Bonomi MD, and Jeffrey A. Borgia PhD. Forum for Research and Clinical Investigation 2008 April 23-24, Searle Conference Center; Rush University Medical Center.
32. **BiopathwayWiki: An interactive, web-based collaborative pathway repository based on Java and Wiki technology.** Casey Frankenberger, David Decrese, Kalpa Patel, John S. Coon, Theodore R. Oegema, Jeffrey A. Borgia. Forum for Research and Clinical Investigation 2008 April 23-24, Searle Conference Center; Rush University Medical Center.
33. **Insulin-like growth factor binding proteins and response in advanced non-small cell lung cancer (NSCLC) patients treated with erlotinib.** M.J. Fidler, A. Gimelfarb, I. Dehghan-Paz, S. Basu, C. Fhied, K.A. Kaiser-Walters, E.C. Farlow, O. Rouhi, M. Batus, J.S. Coon, P. Bonomi, J.A. Borgia. The 13th World Congress on Lung Cancer. San Francisco, CA, July 31-August 4th, 2009.

34. **The use of Tumor-specific Auto-antibodies as a Possible Early Detection Screening Tool for Non-small Cell Lung Cancer.** Erin C. Farlow, Kalpa Patel, Anthony W. Kim, Bao-Shiang Lee, Sanjib Basu, Michael J. Liptay, L. Penfield Faber, Philip Bonomi, William H. Warren, John S. Coon, and Jeffrey A. Borgia. The 13th World Congress on Lung Cancer. San Francisco, CA, July 31-August 4th, 2009.
35. **Immunohistochemistry of biomarkers associated with metastatic and cancer stem cell-like phenotypes in non-small cell lung cancer.** Omid Rouhi, Kelly A Kaiser-Walters, Diana Escarzaga, Danielle Steker, Sanjib Basu, Anthony W. Kim, Michael J. Liptay, L. Penfield Faber, Philip Bonomi, John S. Coon, Jeffrey A. Borgia. The 13th World Congress on Lung Cancer. San Francisco, CA, July 31-August 4th, 2009.
36. **The epithelial-to-mesenchymal-like transition is modulated by BMP7 and TGF- β in non-small cell lung cancer cell lines in vitro.** Patri Mancori MD, Kalpa Patel, Lida Timothy, Sam Buchanan, Michael Liptay, John Coon, Jeffrey Borgia. Forum for Research and Clinical Investigation 2010 April 14 - 15, Searle Conference Center, Rush University Medical Center.
37. **Incomplete elongation of the chondroitin sulfate linkage structure on aggrecan in response to cytokine signaling.** Casey Frankenberger BA, Jeffrey A. Borgia PhD, Theodore R. Oegema PhD. Forum for Research and Clinical Investigation 2010 April 14 - 15, Searle Conference Center, Rush University Medical Center.
38. **A multi-analyte serum test for the early diagnosis of non-small cell lung cancer.** Michael S. Vercillo MD, Erin Farlow MD, Anthony Kim MD, John Coon MD, Sanjib Basu PhD, L. Penfield Faber MD, Michael Liptay MD, Jeffrey Borgia PhD. Forum for Research and Clinical Investigation 2010 April 14 - 15, Searle Conference Center, Rush University Medical Center.
39. **Development of novel biomarkers for prediction of response to Erlotinib in patients with advanced stage NSCLC.** David DeCresce, Omid Rouhi, Cristina Fhied, Jeffrey A. Borgia. Forum for Research and Clinical Investigation 2010 April 14 - 15, Searle Conference Center, Rush University Medical Center.
40. **A multi-analyte serum test for the early diagnosis of non-small cell lung cancer.** M. S. Vercillo, E. C. Farlow, J. Coon, S. Basu, A. W. Kim, P. Faber, P. Bonomi, M. J. Liptay, J. A. Borgia. J Clin Oncol 28:7s, 2010 (suppl; abstr 1554). (Proceedings from the 2010 Annual Meeting of the American Society of Clinical Oncology(ASCO))
41. **Expression profiles associated with disease progression in non-small cell lung cancer.** C. Frankenberger, S. Basu, N. Bild, A. Potti, M. Raponi, Y. Wang, D. G. Beer, J. Coon, P. Bonomi, J. A. Borgia. J Clin Oncol 28, 2010 (suppl; abstr e21103). (Proceedings from the 2010 Annual Meeting of the American Society of Clinical Oncology(ASCO))
42. **Modulation of the epithelial-to-mesenchymal-like transition by BMP7 and TGF- β in non-small cell lung cancer cell lines in vitro.** P. M. Marconi, K. Patel, L. Timothy, S. Buchanan, M. J. Liptay, J. Coon, P. Bonomi, J. A. Borgia. J Clin Oncol 28, 2010 (suppl; abstr e21016). (Proceedings from the 2010 Annual Meeting of the American Society of Clinical Oncology(ASCO))
43. **Expression of sonic hedgehog and its receptor patched in non-small cell lung cancer.** O. Rouhi, K. A. Kaiser-Walters, D. Escarzaga, D. Steker, S. Basu, M. J. Liptay, P. Gattuso, P. D. Bonomi, J. Coon, J. A. Borgia. J Clin Oncol 28:7s, 2010 (suppl; abstr 7620). (Proceedings from the 2010 Annual Meeting of the American Society of Clinical Oncology (ASCO))
44. **Insulin-like growth factor binding proteins related to progression-free survival (PFS) and overall survival (OS) in advanced non-small cell lung cancer (NSCLC) patients treated with chemotherapy.** R. Karmali, M. J. Fidler, I. Cela, G. Olmsted, O. Rouhi, S. Basu, K. K. Walters, J. Coon, P. Bonomi, J. A. Borgia. J Clin Oncol 28:7s, 2010 (suppl; abstr 7553). (Proceedings from the 2010 annual meeting of the American Society of Clinical Oncology (ASCO))

45. **Increase Bcl-2 expression is associated with Bax promoter hypermethylation in neuroendocrine carcinoma (NEC) of the lung.** D. C. McFarland, M. Batus, L. Buckingham, J. Coon, S. Basu, M. J. Fidler, K. K. Walters, J. A. Borgia, P. D. Bonomi; J Clin Oncol 29: 2011 (suppl; abstr e21136)
46. **Expression of Sonic Hedgehog and its Receptor Patched in Non-small Cell Lung Cancer.** O. Rouhi, K. A. Kaiser-Walters, D. Escarzaga, D. Steker, S. Basu, M. J. Liptay, P. Gattuso, P. Bonomi, J. Coon, J. A. Borgia. Journal of Clinical Oncology, 2010 ASCO Annual Meeting Proceedings (Post-Meeting Edition). Vol 28, No 15_suppl (May 20 Supplement), 2010: 7620.
47. **Comparing stem cell markers expression between primary and metastatic lymph node tumors of NSCLC.** Rouhi O, Gallegos M, Kaiser-Walters K.A, Escarzaga D, Steker D, Basu S, Liptay M.J, Gattuso P, Bonomi P, Coon J, Borgia J.A. (2010, September) Poster presented at: AACR (Metastasis and the Tumor Microenvironment); Philadelphia, PA.
48. **Rational selection of biomarkers to help direct erlotinib treatment for advanced non-small cell lung cancer (NSCLC).** Borgia J.A., Frankenberger C, Basu S, Rouhi O, Fidler M.J, Batus M, Fhied C.L, Dalovisio A.P, Lie W.R, Masheshwari R, Hayes D, Coon J, Bonomi P. (2011, April) Poster presented at: the American Association of Cancer Research Annual Meeting; Orlando, FL.
49. **Melanin Binding Charactersitics of α -1 Adrenergic Receptor Antagonists.** Jeffrey S. Gaynes, Jeffrey A. Borgia, Bruce I. Gaynes. The 2011 Association for Research in Vision and Opthamology (ARVO) annual meeting. May 1-5, 2011, Fort Lauderdale, FL.
50. **Evaluation of epithelial-to-mesenchymal transition markers and CXCR4 in primary and metastatic lymph node tumors of NSCLC.** Rouhi O, Marconi P, Gallegos M, Kaiser-Walters K.A, Escarzaga D, Steker D, Basu S, Liptay M.J, Gattuso P, Bonomi P, Coon J, Borgia J.A. (2010, September) Poster presented at: AACR (Metastasis and the Tumor Microenvironment); Philadelphia, PA.
37. **Technical Validation Study of a Multi-Analyte Serum Panel for Lung Cancer Detection.** Jeffrey A. Borgia, David D. Shersher, Michael M. Vercillo, Brett Mahon, Cristina Fhied, Sanjib Basu, Penfield L. Faber, William H. Warren, and Michael J. Liptay. 14th World Congress on Lung Cancer. 14th World Congress on Lung Cancer. July 3-7th, 2011 Amsterdam, The Netherlands.
51. **Serum protein levels may be useful in selecting treatment with an epidermal growth factor receptor tyrosine kinase inhibitor (EGFR TKI) versus chemotherapy in previously treated non-small cell lung cancer (NSCLC) patients.** Mary Jo Fidler, Reem Karmali, Marta Batus, Sanjib Basu, Brett Mahon, Omid Rouhi, Cristina Fhied, David D. Shersher, Kelly A. Walters, Philip Bonomi, and Jeffrey A. Borgia. 14th World Congress on Lung Cancer. July 3-7th, 2011 Amsterdam, the Netherlands.
52. **Serum Biomarkers for Apoptosis for prognosticating progression-free and overall outcomes in advanced non-small cell lung cancer (NSCLC).** Jeffrey A. Borgia, Reem Karmali, Mary Jo Fidler, Sanjib Basu, Brett Mahon, Omid Rouhi, David D. Shersher, Cristina Fhied, Kelly A. Kaiser, Marta Batus, and Philip Bonomi. 14th World Congress on Lung Cancer. July 3-7th, 2011. Amsterdam, the Netherlands.
53. **Serum Biomarkers for Angiogenesis have value for prognosticating progression-free and overall outcomes in advanced NSCLC.** Reem Karmali, Mary Jo Fidler, Marta Batus, Sanjib Basu, Brett Mahon, Omid Rouhi, Cristina Fhied, Gabriela Lobato, Kelly A. Walters, Philip Bonomi and Jeffrey A. Borgia. 14th World Congress on Lung Cancer. July 3-7th, 2011. Amsterdam, the Netherlands.

54. **Development of a Serum Biomarker Panel Predicting Recurrence in Node Negative Non-Small Cell Lung Cancer Patients.** Daniel Rinewalt, Jeffrey A. Borgia, David D. Shersher, Sanjib Basu, Edward Hong, Gary Chmielewski, William Warren and Michael J. Liptay. The 48th Annual Society of Thoracic Surgeons (STS) Meeting. January 28th-February 1st, 2012. San Francisco, CA.
55. **Prognostic value of OGIcNAc modification and its related enzymes in lung adenocarcinoma.** Rouhi O, Arvanitis L, Kaiser K, Sanjib B, Mahon B, Pool M, Liptay M, Bonomi P, Borgia J.A. United States and Canadian Academy of Pathology (USCAP); British Columbia, Canada. March, 2012.
56. **Expression of EMT-Stem cell like biomarkers in lung adenocarcinoma isotypes.** Rouhi O, Kaiser K, Sanjib B, Pool M, Mahon B, Liptay M, Bonomi P, Borgia JA. USCAP; British Columbia, Canada. March, 2012.
57. **Expression of Serum Biomarkers Related to Epithelial-to-Mesenchymal Transition in Non-small Cell Lung Cancer Recurrence.** Daniel Rinewalt, Shaun Daly, Cristina Fhied, Sanjib Basu, Wen-Rong Lie, David Hayes, Brett Mahon, Youping Deng, Philip Bonomi, Lydia Usha, and Michael J. Liptay, and Jeffrey A. Borgia. The 2012 Annual Meeting of the American Association of Cancer Research (AACR). March 31st-April 4th, 2012. Chicago, IL.
58. **Correlation of OGIcNAc modification components and EMT/Stem cell markers in lung adenocarcinoma.** Rouhi O, Arvanitis L, Kaiser K, Marconi P, Sanjib B, Mahon B, Pool M, Usha L, Liptay M, Bonomi P, Borgia JA. American Association of Cancer Research. April, 2012. Chicago, IL.
59. **EGFR gene Mutation and epithelial to mesenchymal transition (EMT) markers in advanced NSCLC patients treated with Erlotinib.** Mary J. Fidler, Manish J. Dave, Thomas A. Hensing, Mark Pool, Brett Mahon, Jeffrey A. Borgia, Kelly Walters, Diana Escarzaga, Marta Batus, and Philip Bonomi. The 2012 American Society of Clinical Oncology Annual Meeting. June, 2012. Chicago, IL.
60. **Panel of serum biomarkers to predict benefit from bevacizumab (BEV) in advanced NSCLC patients.** Eduardo Braun, Mary J. Fidler, Sanjib Basu, Anjali Gangaram, Kelly Kaiser Walters, Reem Karmali, Cristina Fhied, Wen-rong Lie, Jeffrey A. Borgia, Philip D. Bonomi. The 2012 American Society of Clinical Oncology Annual Meeting. June, 2012. Chicago, IL.
61. **Preoperative survivin, ERCC1, and PTEN expression in stage III non-small cell lung cancer (NSCLC) patients (pts) treated with neoadjuvant and definitive chemoradiation and association with overall survival (OS).** Marta Batus, Mary J. Fidler, Kelly Kaiser Walters, Mark Pool, Brett Mahon, Sanjib Basu, Jeffrey A. Borgia, David Sher, Philip D. Bonomi. The 2012 American Society of Clinical Oncology Annual Meeting. June, 2012. Chicago, IL.
62. **EGFR gene mutation and epithelial to mesenchymal transition (EMT) markers in advanced NSCLC patients treated with erlotinib.** M.J. Fidler, S. Basu, T. Hensing, M. Pool, B. Mahon, J.A. Borgia, K. Walters, D. Escarzaga, M. Batus, P.D. Bonomi. *2012 Chicago Multidisciplinary Symposium in Thoracic Oncology*; September, 2012.
63. **Prognostic value of circulating angiogenesis biomarkers in rapidly progressing NSCLC.** Jeffrey A. Borgia, PhD; Cristina Fhied, MS; Sanjib Basu, PhD; Ravi Pithadia, MD; Mary J. Fidler, MD; Marta Batus, MD; Mark Pool, MD; Zahraa Ibrahim, MD; and Philip Bonomi, MD. *The 3rd AACR-IASLC Joint Conference on the Molecular Origins of Lung Cancer*. San Diego, California. January 6-9, 2014.
64. **Biomarkers of phenotypic plasticity associate with clinical outcomes in patients with locally-advanced NSCLC treated with chemoradiotherapy with and without surgery.** Marta Batus, MD; Mary J Fidler, MD; Mark Pool, MD, Sanjib Basu, PhD³, Kelly A. Kaiser-Walters, BS; Shruthi Melinamani, MD; Brett Mahon, MD; Jeffrey A. Borgia, PhD; and Philip Bonomi, MD. *The 15th World Congress on Lung Cancer*. October 27th-31st, 2013. Sydney, Australia.

65. **Circulating biomarkers may help guide selection of erlotinib versus chemotherapy in pretreated advanced NSCLC patients.** Jeffrey A. Borgia, PhD; Mary J Fidler, MD, Anjali Gangaram, MD, Sanjib Basu, PhD, Cristina Fhied, Kelly A. Kaiser-Walters, BS, Brett Mahon, MD,; and Philip Bonomi, MD. *The 15th World Congress on Lung Cancer*. October 27th-31st, 2013. Sydney, Australia.
66. **Development of a serum biomarker panel predicting clinical outcome of chemotherapy with Alimta in patients with NSCLC.** Jeffrey A. Borgia, PhD; Mary J Fidler, MD; Shruthi Melinamani, MD; Ravi Pithadia, MD; Sanjib Basu, PhD; Cristina Fhied, MS; Brett Mahon, MD; and Philip Bonomi, MD. *The 15th World Congress on Lung Cancer*. October 27th-31st, 2013. Sydney, Australia.
67. **Validation of a Multiplex Luminex Assays to Detect Potential Biomarkers Associated with Renal Allograft Rejection.** Tenisha West, Cristina Fhied, M. Flaws, Siva Kanangat, and Jeffrey A. Borgia. *The 39th Annual Meeting for the American Society of Histocompatibility and Immunogenics*. November 17th-21st, 2013. Chicago, IL.
68. **Insulin-like Growth factor-1 and Associated Binding Proteins are Useful Biomarkers to Guide Management of Stage I NSCLC.** John C. Kubasiak, Jeffrey A. Borgia, David D. Shersher, Sanjib Basu, Christopher W. Seder, Ravi Pithadia, Gary Chmielewski, William Warren, and Michael J. Liptay. *The 2014 AATS Annual Meeting*. Toronto, Canada. April 26th-30th, 2014.
69. **Development of a high-throughput autoantigen discovery method for diagnostic test development.** M. Pergande, C. Fhied, C. Piper, R. Pithadia, M.J. Liptay, and Jeffrey A. Borgia. *The 25th Annual International Symposia of the Association of Biomolecular Resource Facilities*. March 22-25, 2014. Albuquerque, NM.
70. **Optimization of 384-well Luminex Immunoassays on the FlexMAP 3D system for routine analyte quantitation.** Cristina Fhied, Melissa Pergande, Ravi Pithadia, and Jeffrey A. Borgia. *The 25th Annual International Symposia of the Association of Biomolecular Resource Facilities*. March 22-25, 2014. Albuquerque, NM.
71. **Systematic Dissection of Col10a1 Cis-enhancer identifies a Potential Novel Regulatory Mechanism during Endochondral Bone Formation.** Junxia Gu, Yaojuan Lu, Feifei Li, Longwei Qiao, Jeffrey A. Borgia, Qiping Zheng. *The 60th Annual Meeting of the Orthopaedic Research Society*. March 15-18, 2014, New Orleans, LA.
72. **Differences in circulating angiogenic biomarkers on serial specimens are prognostic for outcome in bevacizumab treated non-squamous non-small cell lung cancer (NSCLC) patients.** Marta Batus, Ravi Pithadia, John C. Kubasiak, Cristina Fhied, Zahraa Ibrahim, Shruthi Melinamani, Ibdihaj AM Fughhi, Wen-Rong Lie, Sanjib Basu, Mary Jo Fidler, Philip Bonomi, and Jeffrey A. Borgia. *The 50th Annual Meeting of the American Society of Clinical Oncology*. May 30th-June 4th, 2014. McCormick Place, Chicago, IL.
73. **Prognostic Value of Hepatocyte Growth Factor (HGF) and Angiogenic Biomarkers in Advanced Non-Small Cell Lung Cancer (NSCLC).** Jeffrey A. Borgia, PhD; Ravi Pithadia, MD; Zahraa Ibrahim, MD; Cristina Fhied, MS; Sanjib Basu, PhD; Wen-Rong Lie, PhD; Mary J. Fidler, MD; Marta Batus, MD; and Philip Bonomi, MD. *The 50th Annual Meeting of the American Society of Clinical Oncology*. May 30th-June 4th, 2014. McCormick Place, Chicago, IL.
74. **Association of overall survival with weight gain during treatment, initial body mass index (BMI), and glucose intolerance (GI) in advanced non-small cell lung cancer (NSCLC) patients.** Mohammed S. Azeem, Sanjib Basu, Shruthi Melinamani, Marta Batus, Ravi Pithadia, Jeffrey A. Borgia, Philip Bonomi, Mary J. Fidler. *The 50th Annual Meeting of the American Society of Clinical Oncology*. May 30th-June 4th, 2014. McCormick Place, Chicago, IL.

75. **Circulating microRNA profiling for early detection of non-small cell lung cancer.** Youping Deng, Hankui Chen, Helu Liu, Junmei Ai, Yan Li, Mehdi Pirooznia, Jeffrey A. Borgia, Michael J. Liptay, Mary J. Fidler, Philip Bonomi. *The 50th Annual Meeting of the American Society of Clinical Oncology*. May 30th-June 4th, 2014. McCormick Place, Chicago, IL.
76. **Impact of circulating members of the insulin-like growth factor receptor (IGF-1R) axis on outcomes in acute myeloid leukemia.** Reem Karmali, Jeffrey A. Borgia, Melissa L. Larson, Jamile M. Shammo, Sanjib Basu, Parameswaran Venugopal. *The 50th Annual Meeting of the American Society of Clinical Oncology*. May 30th-June 4th, 2014. McCormick Place, Chicago, IL.
77. **Elucidating Molecular Resistance to Trastuzumab using Next-Generation Sequencing in Isogenic Cell Models.** Abukhdeir, AM, Najor, M, Turturro, S, Pergande, M, Borgia, J, Khalak, H, and Cobleigh, M. The 37th Annual San Antonio Breast Cancer Symposium. December 9-13, 2014. The Henry B Gonzales Convention Center, San Antonio, TX.
78. **Angiogenesis Biomarkers May Be Useful in the Management of Patients With Indeterminate Pulmonary Nodules.** C. W. Seder, J. Kubasiak, E. Davila, R. Medeiros, R. Pithadia, I. Tarhoni, C. Fhied, H. Alnajjar, G. W. Chmielewski, W. Warren, S. Basu, J. Borgia, M. Liptay. The 51st Society of Thoracic Surgeons Annual Meeting. January 24-28, 2015. San Diego, CA.
79. **Metformin Exposure is Associated with Improved Disease Free Survival in Early Stage Non-Small Cell Lung Cancer.** Robert A. Medeiros, James Clark, Simon Holoubek, John C. Kubasiak, Ravi Pithadia, Fatima Hamid, Gary W. Chmielewski, William H. Warren, Sanjib Basu, Jeffrey A. Borgia, Michael J. Liptay, Christopher W. Seder. The American Association for Thoracic Surgery. April 25-29, 2015. The Washington State Convention Center, Seattle, WA.
80. **The Role of Circulating Angiogenesis-Associated Factors in Early-Stage Non-Small Cell Lung Cancer: Implications for Mechanistic Insights and Improved Methods for Prognostication.** Imad Tarhoni, Cristina Fhied, Ravi Pithadia, Sanjib Basu, Hanan Alnajjar, Michael Liptay, and Jeffrey A. Borgia. *American Association for Clinical Chemistry Annual Meeting & Clinical Lab Expo*. July 26th- 30th, 2015. Georgia World Congress Center, Atlanta, GA.
81. **The prognostic significance of circulating angiogenesis biomarkers in stage I NSCLC.** Jeffrey A. Borgia, Ravi Pithadia, Christopher W. Seder, Imad Tarhoni, Sanjib Basu, Cristina Fhied, Wenrong Lie, Jehangir Sorabji Mistry, Gary Chmielewski, Philip Bonomi, and Michael J. Liptay. The 16th World Congress on Lung Cancer. September 6-9th, 2015. The Colorado Convention Center. Denver, CO.
82. **Prognostic value of biomarkers associated with glucose metabolism and systemic inflammation in advanced on Small Cell Lung Cancer (NSCLC).** Fidler MJ, Lobato, G, Kerns S, Basu S, Fhied C, Pithadia R, Tarhoni I, Batus M, Bonomi P, and Borgia, JA. The 16th World Congress on Lung Cancer. September 6-9th, 2015. The Colorado Convention Center. Denver, CO. (Pub: J. Thoracic Oncol, vol. 10, no. 9, pp. S368-S368).
83. **Changes in skeletal muscle index and body mass are prognostic factors in first line stage IV non-small cell lung cancer (NSCLC) patients.** Fidler MJ, Kerns S, Esmail, FM, Martin MD, Shors S, Patel N, Patel RR, Sayidine S, Basu S, Pithadia R, Batus M, Borgia JA, Bonomi P, and Shah P. The 16th World Congress on Lung Cancer. September 6-9th, 2015. The Colorado Convention Center. Denver, CO.
84. **Identification of a meta-gene network associated with metformin sensitivity in early-stage non-small cell lung cancer.** Casey A. Frankenberger, Christopher W. Seder, Robert A. Medeiros, Michael J. Liptay, Philip Bonomi, and Jeffrey A. Borgia. The 16th World Congress on Lung Cancer. September 6-9th, 2015. The Colorado Convention Center. Denver, CO.
85. **A Model Incorporating Clinical, Radiographic, and Biomarker Characteristics Predicts Malignancy in Indeterminate Pulmonary Nodules.** Christopher W. Seder, Maria D. Martin, Palmi N. Shah, Xuanji Wang, Ravi Pithadia, Sanjib Basu, Cristina Fhied, Gary W. Chmielewski, William

- H. Warren, Michael J. Liptay, and Jeffrey A. Borgia. The 16th World Congress on Lung Cancer. September 6-9th, 2015. The Colorado Convention Center. Denver, CO.
86. **Serial neutrophil to lymphocyte ratios (NLR) are inversely related to weight change and overall survival, and ALI (Advance lung cancer inflammation) index is inversely related to the overall survival in patients (Pts) with metastatic non-small cell lung cancer (NSCLC).** Marta Batus, Jason N. Macklis, Mary J. Fidler, Sanjib Basu, Jeffrey A. Borgia, Mohammed S. Azeem, David Sher, Philip D. Bonomi. The 16th World Congress on Lung Cancer. September 6-9th, 2015. The Colorado Convention Center. Denver, CO.
 87. **Characterization of Indeterminate Pulmonary Nodules Using a Novel Algorithm Incorporating Clinical, Radiographic and Serum Biomarker.** Profiles. David D. Shersher, Christopher W. Seder, John C. Kubasiak, Palmi N. Shah, Maria D. Martin, Ravi Pithadia, Sanjib Basu, Cristina Fhied, Gary W. Chmielewski, William H. Warren, Michael J. Liptay, and Jeffrey A. Borgia. The 62nd Annual Meeting of the Southern Thoracic Surgical Association. November 4-7th, 2015. Disney's Yacht and Beach Club. Lake Bueno Vista, FL.
 88. **Anti-Vimentin antibodies present at the time of transplant may predict the early development of Chronic Allograft Nephropathy.** Reynold Lopez-Soler, Jeffrey A. Borgia, Sivadasan Kanangat, Cristina Fhied, David J. Conti, Don Constatino, Ryan Chan, and Zhen Wang. The 16th Annual American Society of Transplant Surgeons 'State of the Art' Winter Symposium. January 14-17th, 2016. Loews Miami Beach Hotel, Miami FL.
 89. **Metformin impacts IGF-1R/ Akt signaling and energy metabolism in lung adenocarcinoma.** Gabriela C. Lobato, Steve Li, Imad Tarhoni, Wen-Rong Lie, Jeffrey A. Borgia. The 2016 Annual Meeting of the American Association of Cancer Research. April 16-20, 2016. New Orleans, LA.
 90. **IGF-1 and TGF- β promote EMT and angiogenesis in 3D cultures of lung adenocarcinoma cells: A pilot study.** Imad Tarhoni¹, Gabriela C. Lobato, Cristina Fhied, Melissa Pergande, Yi Wen Chai, and Jeffrey A. Borgia. The 2016 Annual Meeting of the American Association of Cancer Research. April 16-20, 2016. New Orleans, LA. (Pub: Cancer Research 76 (14 Supplement), 1690-16902016)
 91. **KRAS and P53 mutations and FDG-PET as a measure of glycolytic activity in metastatic non-small cell lung cancer patients.** SeoHyun Kim, Ammar Karo, Sanjib Basu, Jeffrey A. Borgia, Philip Bonomi, Marta Batus, Mary J. Fidler. The 2016 American Society of Clinical Oncology (ASCO) Annual Meeting. June 3-7, 2016. McCormick Place; Chicago, IL.
 92. **Association of biomarkers of insulin resistance and inflammation with skeletal muscle index (SMI) in stage IV non-small cell lung cancer (NSCLC).** Marta Batus, Samantha Kerns, Selina Sayidine, Cristina L. Fhied, Sanjib Basu, Philip Bonomi, Jeffrey A. Borgia, Mary J. Fidler, Palmi Shah. The 2016 American Society of Clinical Oncology (ASCO) Annual Meeting. June 3-7, 2016. McCormick Place; Chicago, IL.
 93. **Circulating Angiogenesis Biomarkers are Predictive for Early Stage Non-Small Cell Lung Cancer Progression and Clinical Outcome: Topic.** Tarhoni I, Fhied C, Pithadia R, Seder CW, Basu S, Liptay M, Borgia JA. IASLC Chicago Multidisciplinary Symposium in Thoracic Oncology. September 22 - 24 2016. Chicago, IL.
 94. **Angiogenesis Biomarkers are Associated with Progression Free Survival in Non-Small Cell Lung Cancer Treated with SBRT.** Marwaha G, Blumenfeld P, Walker A, Sayidine S, Fhied C, Borgia JA. IASLC Chicago Multidisciplinary Symposium in Thoracic Oncology. September 22 - 24 2016. Chicago, IL.
 95. **Serum-Based Biomarker Panel May Predict Recurrence in Resected Node Negative Non-Small Cell Lung Cancer < 4 cm in Size.** Christopher W. Seder, Andrew T. Arndt, Sanjib Basu, Cristina L. Fhied, Selina Sayidine, Gary W. Chmielewski, Michael J. Liptay, and Jeffrey A. Borgia.

The Southern Thoracic Surgical Association 63th Annual Meeting, Naples, Florida, November 9-12, 2016.

96. **Multi-Analyte Serum Test Validation for NSCLC: Pre-Operative Nodal Status: A Companion Study to CALGB 140202.** Jeffrey A. Borgia, Christopher W. Seder, Michael J. Liptay, and Robert A. Kratzke. Alliance for Clinical Trials in Oncology; Fall Meeting 2017. Loews Chicago O'Hare Hotel; November 3rd-5th, 2016. Chicago, IL
97. **Induction of receptor tyrosine kinase signaling by sera isolated from patients with lung adenocarcinoma.** Gabriela C. Lobato, Jared D. Fialkoff, Imad Tarhoni, Nicholas Lund, Vineela Chukkapalli, Selina Sayidine, Cristina L. Fhied, Sanjib Basu, Wen-Rong Lie, Michael J. Liptay, Philip Bonomi, and Jeffrey A. Borgia. The 2017 Annual Meeting of the American Association of Cancer Research. April 1-5th, 2017. Washington DC.
98. **Neutrophil to Lymphocyte Ratio Predicts Survival in Advanced NSCLC Patients Treated with Second-Line PD-1.** S. Labomascus, I. Fughhi, M.J. Fidler, J.A. Borgia, S. Basu, M. Hoch, M. Batus, P. Bonomi. 18th World Congress on Lung Cancer. PACIFICO Yokohama Convention Center. October 10-14th, 2017. Yokohama, Japan.
99. **Elevated Plasma Soluble Urokinase Plasminogen Activator Receptor (suPAR) Levels are Associated with Impaired Myocardial Strain as Assessed by Speckle Tracking Echocardiography in Patients with Stage IV Non-Small Cell Lung Cancer.** Ahmad S Manshad, Fatima A Ballout, Jeffrey A Borgia, Jochen Reiser, Tochukwu M Okwuosa. American Heart Association – Scientific Sessions. November 11-15th, 2017. Anaheim, CA.
100. **Eszopiclone Effects on Sleep, Pro Inflammatory Cytokines, and Emotional Memory Bias in PTSD.** Valdespino-Hayden Z, Dowd S, Burgess H, Zalta A, Kaiser E, Lewis E, Stickgold R, Borgia J, Pollack M. (Accepted). Presented at the International Society for Traumatic Stress Studies Conference, Chicago, IL. November, 2017.
101. **“PD-L1 Expression <1% is Associated with Improved Anti-Neoplastic Response to Metformin in Resected, Early-Stage NSCLC”** Poster presentation at Society of Thoracic Surgeons 54th Annual Meeting, Fort Lauderdale, Florida, January 27-31, 2018.
102. **Associations between soluble immune checkpoint molecules and overall survival in advanced non-small cell lung cancer (NSCLC) patients treated with either anti-PD-1/-L1 monoclonal antibodies or single-agent chemotherapy.** Imad Tarhoni, Ibtihaj Fughhi, David Gerard, Sanjib Basu, Cristina L. Fhied, Wen-Rong Lie, Donna Russell, Nisha Thakar, Marta Batus, Philip Bonomi, Mary Jo Fidler, and Jeffrey A. Borgia. Accepted, 2018 Annual Meeting of the American Association of Cancer Research. April 14-18, 2018. Chicago, IL
103. **Novel Tissue-specific Autoantigens Associated with Clinical Outcomes in Response to PD-1/L1 Directed Immunotherapy in NSCLC.** Tarhoni I, Pergande M, Kollipara R, Fhied C, Fughhi I, Gallo K, Batus M, Fidler M, Bonomi P, and Borgia JA. 70th AACCC Annual Scientific Meeting & Clinical Lab Expo. July 29th-August 2nd, 2018. McCormick Place, Chicago, IL.
104. **Association of baseline and longitudinal low neutrophil-lymphocyte ratio (NLR) and high lymphocyte counts (LCs) with progression-free survival (PFS) and overall survival (OS) in real world advanced non-small cell lung cancer (aNSCLC) patients (pts) treated with nivolumab (nivo) or pembrolizumab (pembro).** Stephanie Labomascus, Ibtihaj Fughhi, Andrew McDonald, Philip D. Bonomi, Marta Batus, Mary J. Fidler, Sanjib Basu, Jeffrey Allen Borgia. 70th AACCC Annual Scientific Meeting & Clinical Lab Expo. July 29th-August 2nd, 2018. McCormick Place, Chicago, IL. (Pub: J Clin Oncol 36, 2018 (suppl; abstr e21020))
105. **Prognostic value of neutrophil-to-lymphocyte ratio (NLR), serum albumin and sequence of immunotherapy (Immuno.) on overall survival (OS), and progression free survival (PFS) in patients with metastatic non-small cell lung cancer (NSCLC) treated with ramucirumab plus docetaxel (RD).** Ibtihaj Fughhi, Philip D. Bonomi, Sanjib Basu, Mary J. Fidler, Jeffrey Allen Borgia,

- Marta Batus. 70th AACC Annual Scientific Meeting & Clinical Lab Expo. July 29th-August 2nd, 2018. McCormick Place, Chicago, IL. (pub: J Clin Oncol 36, 2018 (suppl; abstr e21163))
106. **Autoantibodies: A promising prognostic tool for immunotherapy response in advanced non-small cell lung cancer.** Imad Tarhoni, Cristina Fhied, Melissa Pergande, Revathi Kollipara, Connor J. Wakefield, Katherine Gallo, Apoorva Tangri, Marta Batus, Mary Jo Fidler, Philip Bonomi, Jeffrey A. Borgia. The AACR Annual Meeting 2019, March 29th- April 3rd, 2019. Atlanta, GA. (Pub: Cancer Research. 2019, Apr; 18(2019): 2345.)
 107. **Prognostic value of soluble and cell surface immune-checkpoint molecules in advanced non-small cell lung cancer (NSCLC) patients receiving anti-PD-1/-L1 Immunotherapy.** Imad Tarhoni, Mary J Fidler, Ibtihaj A Fughhi, Revathi Kollipara, , Wen-Rong Lie, Jeffrey Martinson, Sanjib Basu, Marta Batus, Philip Bonomi, Alan Landay, Timothy Kuzel, and Jeffrey A Borgia. The AACR Annual Meeting 2019, March 29th- April 3rd, 2019. Atlanta, GA. (pub: Cancer Research. 2019, Apr; 18(2019): 12345)
 108. **Changes in Skeletal Muscle Mass during PD-1 and PD-L1 Checkpoint Inhibitor Therapy in Advanced-Stage Non-Small Cell Lung Cancer Patients.** Maneet Multani, Imad Tarhoni, Ibtihaj Fughhi, Sanjib Basu, Mary Jo Fidler, Marta Batus, Philip Bonomi, Jeffrey A. Borgia, and Palmi Shah. The AACR Annual Meeting 2019, March 29th- April 3rd, 2019. Atlanta, GA. (Pub: Clinical cancer. 2019, May; 18(2019): 12345.)
 109. **Associations between baseline serum biomarker levels and cachexia/precachexia in pretreated non-small cell lung cancer (NSCLC) patients.** Gabriela C. Lobato, Mary J. Fidler, Jared D. Fialkoff, Maneet Multani, Ibtihaj Fughhi, Connor Wakefield, Sanjib Basu, Marta Batus, Philip D. Bonomi, Jeffrey Allen Borgia. Journal of Clinical Oncology 37(15_suppl):3054-3054. [Presented at the 2019 Annual Meeting of the American Society of Clinical Oncology (ASCO) in Chicago, IL. May 31-June 4th, 2019]
 110. **Circulating levels of ligands for receptor tyrosine kinases may contribute to an immunosuppressive tumor microenvironment.** Gabriela C. Lobato, Mary Jo Fidler, Jared D. Fialkoff, Marta Batus, Philip Bonomi, and Jeffrey A. Borgia. Accepted as poster presentation for the 2019 World Congress on Lung Cancer in Barcelona, Spain. September 7-10th, 2019.
 111. **Validation of tumor organoids from lung adenocarcinoma as a model of primary tumor genotype.** Christopher W. Seder, MD, Andrew T. Arndt, MD; Justin M. Karush, DO, Nicole Geissen, DO; Connor Wakefield, BS; Ankur Naqib, PhD; Michael J. Liptay, MD; Casey Frankenberger, PhD; Jeffrey A. Borgia, PhD. Accepted as poster presentation for the 2019 World Congress on Lung Cancer in Barcelona, Spain. September 7-10th, 2019.
 112. **Associations between baseline serum biomarker levels and cachexia/precachexia in pretreated non-small cell lung cancer (NSCLC) patients.** Gabriela C. Lobato, Mary J. Fidler, Jared D. Fialkoff, Maneet Multani, Ibtihaj Fughhi, Connor Wakefield, Sanjib Basu, Marta Batus, Philip D. Bonomi, Jeffrey Allen Borgia. Accepted as a podium presentation for the 2019 World Congress on Lung Cancer in Barcelona, Spain. September 7-10th, 2019.
 113. **Bioinformatics Model of Serum Biomarkers to Prognosticate the Response to Programmed death / and ligand 1 Targeted Immunotherapy in Metastatic Non-small Cell Lung Cancer.** Imad Tarhoni, Maneet Multani, David Gerard, Ibtihaj Fughhi, Mary Fidler, Marta Batus, Philip Bonomi, and Jeffrey A Borgia. The ASCP 2019 Annual Meeting, Phoenix, Arizona September, 10th-14th, 2019.
 114. **Changes in Immune checkpoints landscape associated with TGF- β induced EMT in lung adenocarcinoma.** I. Tarhoni, H. Moudgalya, D. Gerard, J. Borgia. The 2019 North American Congress on Lung Cancer, Chicago, IL October 10th -12th, 2019.

115. **Biomarkers of autoimmune toxicity in metastatic SCLC patients receiving PD-1/PDL-1 targeted therapy.** I. Tarhoni, A. Tangri, B. Gilmore, M. Fidler, M. Batus, P. Bonomi, J. Borgia, The 2019 North American Congress on Lung Cancer, Chicago, IL October 10th -12th, 2019.
116. **Prognostic value of baseline autoantibodies in metastatic NSCLC patients receiving PD-/PDL-1 targeted immunotherapy.** I. Tarhoni, R. Kollipara, W.-R. Li, H. Moudgalya, M. Fidler, M. Batus, P. Bonomi, J. Borgia, The 2019 North American Congress on Lung Cancer, Chicago, IL October 10th -12th, 2019.
117. **Clinical Factors Associated with Rapid Progression in Previously Treated Patients with Metastatic NSCLC on Immunotherapy (IO).** M. Randall, M. Batus, J. Borgia, P. Bonomi, MJ Fidler. The 2019 North American Congress on Lung Cancer, Chicago, IL October 10th -12th, 2019.
118. Claire Auger, Grant Lewin, Darin Bagar, Imad Tarhoni, Jeffrey A Borgia. **Analyte Integrity and Quality Control for Specimens Biobanked using Dried Blood Spot Cards.** International Society for Biospecimen and Environmental Repositories (ISBER), April 14-18, 2020, Virtual, 2020.
119. Nicole Yun, Sherin Juliet Rouhani, Brendan Gilmore, Ethan M. Ritz, Christine M. Bestvina, Imad Tarhoni, Marta Batus, Jeffrey Allen Borgia, Philip D. Bonomi, and Mary J. Fidler. **The prognostic value of neutrophil-to-lymphocyte ratio in patients with epidermal growth factor receptor mutated advanced non-small cell lung cancer (NSCLC).** ASCO 2020, Virtual, May 2020.
120. Imad Tarhoni, Cristina Fhied, David Gerard, Jeffrey A Borgia, **Development of Serological Test for COVID-19 Diagnosis and Monitoring.** XMAP Connect 2020, Labroots Virtual Meeting, June 13, 2020.
121. Imad Tarhoni, Cristina Fhied, Mar J Fidler, Marta Batus, Philip Bonomi, Jeffrey A Borgia. **Novel Autoantibodies Biomarkers Panel to Prognosticate the Clinical Outcomes in Advanced-stage NSCLC Patients Receiving Anti PD-1/PD-L1 Immunotherapy.** ASCP 2020, September 9-11, Virtual, 2020. (Accepted)
122. Imad Tarhoni, Jeffrey Martinson, Cristina Fhied, Timothy Kuzel, Alan Landay, Marta Batus, Mary Jo Fidler, Philip Bonomi, and Jeffrey A. Borgia. **Immune Checkpoint Molecules on Peripheral Monocytes Can Predict the Response to PD-1/PD-L1 in Advanced Stage Non-small Cell Lung Cancer (NSCLC) Patients.** AACC 2020, December 13-17, Virtual, 2020. (Accepted)

Web-based Presentations

1. **News Interview: Breath test may detect breast cancer.**
ABC channel 7, Sylvia Perez – reporter
Broadcast date: October 14th, 2010
<http://abclocal.go.com/story?section=news/health&id=7725884>
2. **Webinar: Biomarker Discovery, Quantitation, and Analysis with Multiplex Immunoassays.**
Broadcast Date: Thursday, September 25, 2014. Time: 1 PM EDT. Genetic Engineering and Biotechnology News. <http://www.genengnews.com/webinars/biomarker-discovery-quantitation-and-analysis-with-multiplex-immunoassays/231/>
3. **Nature Magazine: InsideView**
Special Supplement to Nature
Published 10 March, 2016
<http://www.nature.com/advertorials/insideview/pdf/ivmilliporemar2016.pdf>
4. **Drug Target Review, Issue 3, 2016**
“Industry Trends in Biomarker Development”

Published 20 September, 2016

<http://www.drugtargetreview.com/digital/dtr-issue-3-2016/index.html?r=55>

5. **SelectScience: Editorial Article**

Discover How Researchers at Rush Medical Center are Developing Novel Diagnostic Tests for Non-Small Cell Lung Cancer

Published: Dec 16th, 2016

<http://www.selectscience.net/editorial-articles/discover-how-researchers-at-rush-medical-center-are-developing-novel-diagnostic-tests-for-non-small-cell-lung-cancer/?artID=42630>

6. **Biocompare – Featured Investigator**

Dr. Jeffrey A. Borgia Explores Additional Complexities of Serum Proteomics

Published May 12th, 2017

<http://www.biocompare.com/Life-Science-Videos/337103-Watch-Video-Jeffrey-Borgia-Explores-Additional-Complexities-of-Serum-Proteomics/?arev=true>

7. **Cancer Wellness, by Brittany Julios**

“Breathe Easy” – Innovations and Research Section

Published March 13th, 2019

<https://cancerwellness.com/innovations-and-research/breathe-easy/>

8. **SelectScience: Editorial Article**

Discover How Researchers at Rush Medical Center are Developing Novel Diagnostic Tests for Non-Small Cell Lung Cancer

Published: Dec 16th, 2016

<http://www.selectscience.net/editorial-articles/discover-how-researchers-at-rush-medical-center-are-developing-novel-diagnostic-tests-for-non-small-cell-lung-cancer/?artID=42630>

9. **Drug Target Review, Issue 3, 2016**

“Industry Trends in Biomarker Development”

Published 20 September, 2016

<http://www.drugtargetreview.com/digital/dtr-issue-3-2016/index.html?r=55>

10. **Biocompare – Featured Investigator**

Dr. Jeffrey A. Borgia Explores Additional Complexities of Serum Proteomics

Published May 12th, 2017

<http://www.biocompare.com/Life-Science-Videos/337103-Watch-Video-Jeffrey-Borgia-Explores-Additional-Complexities-of-Serum-Proteomics/?arev=true>

11. **Cancer Wellness, by Brittany Julios**

“Breathe Easy” – Innovations and Research Section

Published March 13th, 2019

<https://cancerwellness.com/innovations-and-research/breathe-easy/>