**Deborah Plana, PhD, MD Candidate**

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**EDUCATION**

**Harvard Medical School (HMS)/MIT** **MD-PhD Program ▪ Boston, MA** *Jun. 2017-May 2024*

Candidate for MD in Harvard-MIT Program in Health Sciences and Technology (HST)

Harvard PhD in Systems Biology, with the dissertation: [“Clinical Trial Data Science to Advance Precision Oncology”](https://www.proquest.com/openview/21ae5b704a53788316adc36be0679c61/1?pq-origsite=gscholar&cbl=18750&diss=y)

Completed clinical rotations in Anesthesia, Emergency Medicine, Internal Medicine, Neurology, Ob/Gyn, Oncodermatology, Pediatrics, Primary Care, Psychiatry, Radiology, Surgical Critical Care, and Surgery

**Massachusetts Institute of Technology** ▪ **Cambridge, MA** *Jun. 2013-Jun. 2017*

Bachelor of Science in Biological Engineering *GPA 4.9/5.0*

Minor in Statistics and Data Science

**AWARDS**

**Ruth L. Kirschstein National Research Service F30 Award** ▪ **National Cancer Institute** *Jun. 2021-May 2024*

**Harvard Graduate Prize Fellowship** ▪ **HMS** *Mar. 2019*

**Quantitative Sciences in Drug Development Best Poster** ▪ **Novartis** *Aug. 2018*

**Presidential Scholar** ▪ **HMS** *Aug. 2017, Aug .2018*

**Medical Scientist Training Program** ▪ **National Institutes of Health** *Jun. 2017-May 2024*

**Reddy Family Undergraduate Research Opportunities Fund** ▪ **MIT** *Dec. 2016*

**Tau Beta Pi Engineering Honor Society** ▪ **MIT** *Sep. 2016*

**James E. Cunningham (1957) Memorial Scholar ▪ MIT**   *Dec. 2015*

**Industrial Advisory Council for Minority Education Student Prize** **▪ MIT** *Dec. 2015*

**MIT Biological Engineering Department Barry M. Goldwater Scholarship Nominee** ▪ **MIT** *Nov. 2015*

**Ilona Karmel Writing Prize ▪** **MIT** *May 2015*

**Exceptional Research Opportunities Program** **Grant** ▪ **Howard Hughes Medical Institute**   *Jan. 2015*

**RESEARCH EXPERIECE**

**Sorger Laboratory** ▪ **HMS Laboratory of Systems Pharmacology** ▪ **Boston, MA** *Jan. 2018-Mar. 2022*

**HMS/MIT MD-PhD Program**

* Invented a new statistical tool to identify treatment-sensitive tumor subgroups in ‘basket trials’ of new therapies.
* Discovered that a parametric form (Weibull) describes patient survival data and can estimate the therapeutic efficacy for small patient cohorts.
* Established an online repository of individual participant survival data in oncology: [cancertrials.io](http://www.cancertrials.io/).
* Identified drug-response biomarkers in ovarian cancer and T-cell lymphoma using patient-derived xenograft (PDX) data.

**Lauffenburger Laboratory** ▪ **MIT Department of Biological Engineering** ▪ **Cambridge, MA** *Jan. 2015-Jun. 2017*

**Undergraduate Research Opportunities Program (UROP) and MGH Summer Research Trainee Program (SRTP)**

* Constructed and collected cytokine data from a triculture hydrogel model of endometriosis.
* Used a mixed-effects model of cytokine data to investigate the role of different cell types in endometriosis.
* Developed blood-based CLIA assays for prognosticating patient resistance to targeted therapies.
* Analyzed RNA-Seq and microarray data from melanoma patient tumor tissue and exosome samples to predict patients’ response to immune-checkpoint inhibitors.

**Beth Israel Deaconess Medical Center Faculty Hour** ▪ **Boston, MA** *Jan. 2014-Mar. 2014*

**Faculty Hour Team Member**

* Collected, analyzed, and presented data on patients’ clinical conditions and waiting times.
* Assisted in writing official hospital protocols, such as guidelines on the care of post-anesthesia care unit patients.

**WORK EXPERIENCE**

**Longitude Capital ▪ Research Fellow ▪ Boston, MA** *Aug. 2020-Feb. 2021*

* Sourced and evaluated early-stage companies for biotechnology investment team.
* Investigated therapeutic areas of interest and created presentation materials to summarize research findings.

**LEADERSHIP AND TEACHING**

**Greater Boston Pandemic Fabrication Team ▪ Co-Founder, Coordinator ▪ Harvard-MIT** *Mar. 2020-Jan. 2022*

* Coordinated team of ~100 scientists, clinicians, and engineers in responding to medical supply shortages during the COVID-19 pandemic, with resulting products used in Boston-area hospitals.
* Guided preparation and publication of multiple open-source research articles on the creation, reuse, and clinical testing of personal protective equipment during a crisis, available at [panfab.org](http://www.panfab.org).

**Medical School Admissions Committee for Harvard-MIT HST ▪ Member ▪ HMS** *Jul. 2019-Mar. 2021*

* Reviewed applications, conducted interviews, contributed to discussions at subcommittee meetings, and submitted interview reports for medical school applicants.

**Principles and Practices of Drug Development ▪ Teaching Assistant ▪ HMS and MIT** *Aug. 2020-Dec. 2020*

* Created and presented course materials on pharmacology fundamentals, preclinical drug discovery, clinical trials,

drug manufacturing, FDA regulation, and financing of new therapeutics.

**HST MD Student Diversity Ambassadors Group ▪ Founding Member ▪ HMS** *Mar. 2018-Dec. 2020*

* Collaborated with diversity initiatives at HMS and MIT for prospective student outreach and recruitment.

**Crimson Care Collaborative ▪ Co-Director ▪ HMS** *Mar. 2018-Mar. 2019*

* Directed quality improvement efforts across seven clinical sites in the Greater Boston Area.
* Implemented projects to register patients to vote and reduce clinic no-show rates.
* Managed about 300 volunteers consisting of medical, dental, and undergraduate students.

**Fields, Forces and Flows (2.793/6.023/20.330) ▪ Teaching Assistant ▪ MIT** *Jan. 2017-May 2017*

* Taught weekly recitations and office hours. Organized review sessions, graded exams, and moderated Piazza forum.
* Course topics taught included electric fields, fluid flows, transport phenomena and applications to biological systems.
* Received 7.0/7.0 instructor rating.

**Latino Cultural Center (LCC) ▪ President ▪ MIT** *May 2016-May 2017*

* Official representative of about 150 students to the MIT administration and outside organizations.

**Rune Literary Magazine ▪ Editor-In-Chief ▪ MIT** *May 2015-May 2016*

* Organized membership of over 30 students. Ensured magazine printing, publicity, funding, and distribution.

**PEER-REVIEWED PUBLICATIONS AND PREPRINTS**

1. Zhou, I. **\***, **Plana, D. \*,** & Palmer, A. C. (2023). *Tumor-specific activity of precision medicines in the NCI-MATCH trial* [Preprint]. \*These authors contributed equally.
2. **Plana, D.**, Fell, G., Alexander, B. M., Palmer, A. C., & Sorger, P. K. (2022). *Cancer patient survival can be parametrized to improve trial precision and reveal time-dependent therapeutic effects.* Nature Communications, 13(1), 873.
3. **Plana, D.**, Palmer, A. C., & Sorger, P. K. (2022*). Independent Drug Action in Combination Therapy: Implications for Precision Oncology*. Cancer Discovery, 12(3), 606–624.
4. **Plana, D.**, Shung, D. L., Grimshaw, A. A., Saraf, A., Sung, J. J. Y., & Kann, B. H. (2022). *Randomized Clinical Trials of Machine Learning Interventions in Health Care: A Systematic Review.* JAMA Network Open, 5(9), e2233946.
5. Hwangbo, H., Patterson, S., Dai, A., **Plana, D.,** & Palmer, A. C. (2022). *Additivity predicts the efficacy of most approved combination therapies for advanced cancer* [Preprint].
6. Ye, Z., Qian, J. M., Hosny, A., Zeleznik, R., **Plana, D**., Likitlersuang, J., Zhang, Z., Mak, R. H., Aerts, H. J. W. L., & Kann, B. H. (2022). *Deep Learning–based Detection of Intravenous Contrast Enhancement on CT Scans.* Radiology: Artificial Intelligence, 4(3), e210285.
7. **Plana, D.\***, Tian, E.\*, Cramer, A. K.\*, Yang, H.\*, Carmack, M. M., Sinha, M. S., Bourgeois, F. T., Yu, S. H., Masse, P., Boyer, J., Kim, M., Mo, J., LeBoeuf, N. R., Li, J., & Sorger, P. K. (2021). *Assessing the quality of nontraditional N95 filtering face-piece respirators available during the COVID-19 pandemic*. BMC Infectious Diseases, 21(1), 712. \*These authors contributed equally.
8. Cramer, A. K.\*, **Plana, D.\***, Yang, H.\*, Carmack, M. M., Tian, E., Sinha, M. S., Krikorian, D., Turner, D., Mo, J., Li, J., Gupta, R., Manning, H., Bourgeois, F. T., Yu, S. H., Sorger, P. K., & LeBoeuf, N. R. (2021). *Analysis of SteraMist ionized hydrogen peroxide technology in the sterilization of N95 respirators and other PPE*. Scientific Reports, 11(1), 2051. \*These authors contributed equally.
9. Antonini, M.-J.\*, **Plana, D.\***, Srinivasan, S.\*, Atta, L., Achanta, A., Yang, H., Cramer, A. K., Freake, J., Sinha, M. S., Yu, S. H., LeBoeuf, N. R., Linville-Engler, B., & Sorger, P. K. (2021). *A Crisis-Responsive Framework for Medical Device Development Applied to the COVID-19 Pandemic*. Frontiers in Digital Health, 3, 617106. \*These authors contributed equally.
10. Kothakonda, A.\*, Atta, L.\*, **Plana, D**.\*, Ward, F. \*, Davis, C., Cramer, A., Moran, R., Freake, J., Tian, E., Mazor, O., Gorelik, P., Van, C., Hansen, C., Yang, H., Li, Y., Sinha, M. S., Li, J., Yu, S. H., LeBoeuf, N. R., & Sorger, P. K. (2021*). De Novo Powered Air-Purifying Respirator Design and Fabrication for Pandemic Response.* Frontiers in Bioengineering and Biotechnology, 9, 725. \*These authors contributed equally.
11. McAvoy, M.\*, Bui, A.-T. N.\*, Hansen, C.\*, **Plana, D.\***, Said, J. T., Yu, Z., Yang, H., Freake, J., Van, C., Krikorian, D., Cramer, A., Smith, L., Jiang, L., Lee, K. J., Li, S. J., Beller, B., Huggins, K., Short, M. P., Yu, S. H., … LeBoeuf, N. R. (2021). *3D Printed frames to enable reuse and improve the fit of N95 and KN95 respirators.* BMC Biomedical Engineering, 3(1), 10. \*These authors contributed equally.
12. Kassamali, B., Yu, Z., Davis, C., Carmack, M., Bui, A.-T. N., Said, J. T., **Plana, D.**, Yang, H., Sorger, P., LeBoeuf, N. R., & LaChance, A. H. (2021). *Conversion of Existing UVB Phototherapy Units to UVC Germicidal Chambers for N95 Decontamination: Lessons Learned*. Photobiomodulation, Photomedicine, and Laser Surgery, 39(2), 83–85.
13. Palmer, A. C.\*, **Plana, D.\***, Gao, H.\*, Korn, J. M., Yang, G., Green, J., Zhang, X., Velazquez, R., McLaughlin, M. E., Ruddy, D. A., Kowal, C., Muszynski, J., Bullock, C., Rivera, S., Rakiec, D. P., Elliott, G., Fordjour, P., Meyer, R., Loo, A., … Sorger, P. K. (2020). *A Proof of Concept for Biomarker-Guided Targeted Therapy against Ovarian Cancer Based on Patient-Derived Tumor Xenografts*. Cancer Research, 80(19), 4278–4287. \*These authors contributed equally
14. Palmer, A. C.**\***, **Plana, D.\***, & Sorger, P. K. (2020). *Comparing the Efficacy of Cancer Therapies between Subgroups in Basket Trials*. Cell Systems, 11(5), 449-460.e2. \*These authors contributed equally.
15. Mostaghimi, A.\*, Antonini, M.-J.\*, **Plana, D.\***, Anderson, P. D., Beller, B., Boyer, E. W., Fannin, A., Freake, J., Oakley, R., Sinha, M. S., Smith, L., Van, C., Yang, H., Sorger, P. K., LeBoeuf, N. R., & Yu, S. H. (2020). *Regulatory and Safety Considerations in Deploying a Locally Fabricated, Reusable Face Shield in a Hospital Responding to the COVID-19 Pandemic*. Med, 1(1), 139-151.e4. \*These authors contributed equally.
16. Tyan, K., Levin, A., Avalos-Pacheco, A., **Plana, D.**, Rand, E. A., Yang, H., Maliszewski, L. E., Chylek, L. A., Atta, L., Tye, M. A., Carmack, M. M., Oglesby, N. S., Burgin, S., Yu, S. H., LeBoeuf, N. R., & Kemp, J. M. (2020). *Considerations for the Selection and Use of Disinfectants Against SARS-CoV-2 in a Health Care Setting*. Open Forum Infectious Diseases, 7(ofaa396).
17. Shi, A., Kasumova, G. G., Michaud, W. A., Cintolo-Gonzalez, J., Díaz-Martínez, M., Ohmura, J., Mehta, A., Chien, I., Frederick, D. T., Cohen, S., **Plana, D.**, Johnson, D., Flaherty, K. T., Sullivan, R. J., Kellis, M., & Boland, G. M. (2020). *Plasma-derived extracellular vesicle analysis and deconvolution enable prediction and tracking of melanoma checkpoint blockade outcome*. Science Advances, 6(46), eabb3461.
18. Koch, R., Christie, A. L., Crombie, J. L., Palmer, A. C., **Plana, D.**, Shigemori, K., Morrow, S. N., Van Scoyk, A., Wu, W., Brem, E. A., Secrist, J. P., Drew, L., Schuller, A. G., Cidado, J., Letai, A., & Weinstock, D. M. (2019). *Biomarker-driven strategy for MCL1 inhibition in T-cell lymphomas*. Blood, 133(6), 566–575.
19. Schrier, S. B., Hill, A. S., **Plana, D.**, & Lauffenburger, D. A. (2016). *Synergistic Communication between CD4+ T Cells and Monocytes Impacts the Cytokine Environment*. Scientific Reports, 6(1), 34942.

**ABSTRACTS, FEDERAL COMMENTS, AND DIGITAL PUBLICATIONS**

1. Hwangbo, H., Patterson, S., Dai, A., **Plana, D.**, & Palmer, A. C. (2023). *Abstract 5718: Additivity predicts the clinical efficacy of most approved combination therapies for advanced cancer.* Cancer Research, 83(7\_Supplement), 5718–5718.
2. **Plana, D.** (2022). *Data science can help us run better cancer clinical trials*. Mathematical Oncology Blog.
3. Ye, Z., Likitlersuang, J., Zeng, J., **Plana, D.**, Mak, R. H., Aerts, H., Haibe-Kains, B., Margalit, D. N., Schoenfeld, J. D., Tishler, R. B., & Kann, B. H. (2022). *Deep Learning for Automated Outcome Prediction in Oropharyngeal Cancer from Tumor and Lymph Node Imaging Data*. International Journal of Radiation Oncology • Biology • Physics, 114(3), e325.
4. Ojo, A., Johnson, S., Erfani, P., Guo, R., Garmilla, A., Saini, A., Benitez, B., Salinas, K. E., **Plana, D.**, Pena Perez, A., Guzman, J., So-Armah, C., & Gottlieb, B. (2022). *A high-touch outreach model to re-engage patients in mammogram screening*. Journal of Clinical Oncology, 40(16\_suppl), e18555–e18555.
5. Johnson, S., Ojo, A., Erfani, P., Guo, R., Garmilla, A., Saini, A., Benitez, B., Salinas, K. E., **Plana, D.**, Perez, A. P., Guzman, J., So-Armah, C., & Gottlieb, B. (2022). *Re-engaging patients in breast cancer screening through a scalable, high-touch care model.* Journal of General Internal Medicine, S553–S553.
6. Peterson, J. S., **Plana, D.**, Bitterman, D. S., Johnson, S. B., & Kann, B. H. (2021). *Growth in eligibility criteria content and failure to accrue among National Cancer Institute (NCI)-affiliated clinical trials*. Journal of Clinical Oncology, 39(15\_suppl), 1515–1515.
7. **Plana, D.**, Arfe, A., & Sinha, M. S. (2020). *FDA-2020-D-1106-0139,* *Re: FDA Guidance on Conduct of Clinical Trials of Medical Products during COVID-19 Pandemic; Guidance for Industry, Investigators, and Institutional Review Boards*. Regulations.gov.
8. **Plana, D**., Arfè, A., & Sinha, M. S. (2020). *Re-Envisioning Clinical Trials During The COVID-19 Pandemic.* Health Affairs Blog.
9. Gupta, A., **Plana, D**., Antonini, M.J., Cramer, A., McAvoy, M., Atta, L. *HST students share their reflections on responding to Covid-19*. (2020). Harvard-MIT Health Sciences and Technology News.
10. Shi, A., Cintolo-Gonzalez, J. A., Chien, I., Frederick, D. T., Alpatov, R., Michaud, W., **Plana, D.**, Panka, D., Corcoran, R., Flaherty, K., Sullivan, R., Kellis, M., & Boland, G. (2018). *Abstract B25: Exosomal transcriptomic signatures tracks and predicts response to checkpoint blockade immunotherapy*. Systems Immuno-Oncology.
11. Kasumova, G. G., Kim, M. S., Shi, A., Chein, I., Frederick, D. T., Alpatov, R., Michaud, W. A., **Plana, D.**, Panka, D. J., Corcoran, R. B., Flaherty, K. T., & Sullivan, R. J. (2018). *Society of Surgical Oncology 71st Annual Cancer Symposium: Exosomal PD-L1 Protein Expression Correlates with Targeted Therapy Resistance in Melanoma*. Annals of Surgical Oncology, 25(S1), 1–230.
12. Shi, A., Kasumova, G., Chien, I., Cintolo-Gonzalez, J., Frederick, D. T., Alpatov, R., Michaud, W. A., **Plana, D.**, Corcoran, R., Flaherty, K., Sullivan, R., Kellis, M., & Boland, G. (2018). *Abstract 4282: Deconvolution of plasma-derived exosomes for tracking and prediction of immunotherapy across multiple tissues*. Bioinformatics and Systems Biology, 4282–4282.
13. Kasumova, G. G., Shi, A., Cintolo-Gonzalez, J. A., Chein, I., Frederick, D. T., Alpatov, R., Michaud, W. A., **Plana, D.**, Panka, D. J., Corcoran, R. B., Flaherty, K. T., Sullivan, R. J., Kellis, M., & Boland, G. M. (2018). *Abstract A35: BRAF inhibition increases exosomal PD-L1 protein expression in melanoma*. Checkpoints and Immunomodulation.
14. Cohen, S., Cintolo-Gonzalez, J. A., **Plana, D.**, Sullivan, R., & Boland, G. (2017). *Society of Surgical Oncology 70th Annual Cancer Symposium: Mixed Responder Cohort of Metastatic Melanoma Patients Treated with Anti Programmed Cell Death-1*. Annals of Surgical Oncology, 24(S1), 1–202.
15. Cintolo-Gonzalez, J. A., Cohen, S., Michaud, W. A., **Plana, D.**, Panka, D. J., Sullivan, R., & Boland, G. (2017). *Society of Surgical Oncology 70th Annual Cancer Symposium: Use of Circulating Microvesicles, Exosomes, as a Biomarker to Track Response to Immunotherapy*. Annals of Surgical Oncology, 24(S1), 1–202.

**ORAL PRESENTATIONS**

1. **Plana, D.** *Highlights from the Bigelow: Residency Intake.* MGH Department of Medicine Noon Conference. Boston, MA. April 2023.
2. **Plana, D.** *Biological Engineering as a Foundation for a Career in Medical Research.* 20.001: MIT Introduction to Professional Success and Leadership in Biological Engineering. Cambridge, MA. November 2022.
3. **Plana, D.**,Palmer, A.C.,Sorger, P.K.*Advancing the design and interpretation of cancer clinical trials through systematic data mining and analysis.* HMS Ludwig Cancer Center. Virtual. June 2021.
4. **Plana, D.** *Making Precise Estimates of Drug Efficacy from Small Amounts of Patient Data.* Tumor Therapeutics and Resistance Session; Junior Investigator Meeting for the NCI Cancer Systems Biology Consortium, Physical Sciences-Oncology Network, and the Big Data Scientist Training Enhancement Program. Virtual. August 2020.
5. **Plana, D.** *Introduction to PanFab: Mobilizing a volunteer response to COVID-19* (Speaker); *Resiliency and Trust: Local, regional, and national response to PPE shortages* (Panelist). Harvard-MIT Center for Regulatory Science Pandemic Response: Resilience and Recovery in the Era of COVID-19. Virtual. June 2020.
6. **Plana, D.** *Parametric fitting of over 100,000 individual patient events from clinical trials in oncology*. Harvard-MIT Center for Regulatory Science Doctoral Student Symposium. Boston, MA. February 2020.
7. **Plana, D.** *Of mice and (small numbers of) men: Improving estimates of drug efficacy in oncology.* Harvard Systems Biology Department Pizza Talk. Boston, MA. October 2019.
8. **Plana, D.** *Parametric fitting of clinical trial data in oncology*. Harvard Institute for Therapeutic Sciences Symposium. Boston, MA. October 2019.
9. **Plana, D.** *Using blood-based assays and RNA data to predict melanoma patient response to therapy*. Summer Research Trainee Program at the Massachusetts General Hospital. Boston, MA. June 2016.

**POSTER PRESENTATIONS**

1. **Plana, D.**, Fell, G., Alexander, B. M., Palmer, A. C., & Sorger, P. K*. Cancer patient survival can be accurately parameterized, improving trial precision and revealing time-dependent therapeutic effects.* Pacific Symposium on Biocomputing (PSB). Big Island, HI. January 2022.
2. **Plana, D.**, Fell, G., Alexander, B. M., Palmer, A. C., & Sorger, P. K. *Re-analysis and sharing of clinical trial data to advance precision oncology.* 2021 Cancer Systems Biology Consortium Annual Investigator Meeting. Virtual. September 2021.
3. **Plana, D.**, Fell, G., Alexander, B. M., Palmer, A. C., & Sorger, P. K. *Cancer patient survival can be accurately parameterized, revealing time-dependent therapeutic effects and doubling the precision of small trials.* Keystone Symposia, Precision Oncology: Translating Discovery to the Clinic. Virtual. June 2021.
4. **Plana, D.**,Palmer, A. C., Sorger, P.K**.** *Making Precise Estimates of Drug Efficacy from Small Amounts of Patient Data*. NCI Center for Cancer Systems Pharmacology Annual Investigators Meeting. Virtual. September 2020.
5. **Plana, D.**,Palmer, A. C., Sorger, P.K**.** *Predicting patient response to cancer combination therapies from clinical trial data*.Novartis-Academia Conference on Quantitative Sciences in Drug Development. Cambridge, MA. August 2018.
6. **Plana, D.**,Hill, A., Cook, C., Griffith, L., Lauffenburger, D. *Characterizing a 3-D hydrogel model of the human endometrium and its interactions with immunological factors using mixed effects modeling*. Biomedical Engineering Society Conference. Minneapolis, MN. October 2016.
7. Cintolo-Gonzalez, J., Michaud, W., Cohen, S., **Plana, D.**, Panka, D., Sullivan, R., Boland, G. *Use of Circulating Microvesicles, Exosomes, as a Biomarker to Track Disease Burden in Melanoma*. Massachusetts General Hospital Clinical Research Day*.* Boston, MA. October 2016.
8. **Plana, D.**, Wang, S., Cepko, C. *Characterization of retinal cell subpopulations expressing distinct Otx2 enhancers.* Howard Hughes Medical Institute Exceptional Research Opportunities Program Meeting. Chevy Chase, MD. May 2016.
9. **Plana, D.**,Hill, A., Cook, C., Griffith, L., Lauffenburger, D. *Creating a 3-D hydrogel model of the human endometrium and its interactions with immunological factors*. New England Science Symposium. Cambridge, MA. April 2016.
10. **Plana, D.**, Cocchi, Sundar, Pleumann, Grzybinski, Shaefi, Brogna, Sisti, Butler, Small, Cain, Muret-Wagstaff, Foley, Talmor, Ma, Whyte, Kleinman, Simon. *Early Identification and Care of the Critically Ill Post-Operative Patient*. Beth Israel Deaconess Medical Center Silverman Symposium. Boston, MA. April 2015.

**PROFESSIONAL ACTIVITIES**

**Ad hoc referee:** BMJ Open, Frontiers in Medicine

**Poster judge:** 22nd AnnualNew England Science Symposium

**Memberships:** American Association for Cancer Research, American Society of Clinical Oncology, Massachusetts

Medical Society**,** Harvard Center for Cancer Systems Pharmacology Executive Committee, Harvard-MIT Center for

Regulatory Science, HMS Medical Student COVID-19 Curriculum Committee

**TECHNICAL SKILLS**

**Programming and data analysis:** Mathematica, MATLAB, Python, R

**Image editing:** Adobe Creative Suite (including Illustrator, Photoshop, InDesign)

**LANGUAGE SKILLS**

**English:** Native/Bilingual proficiency.

**Spanish:** Native/Bilingual proficiency. Certified to provide clinical care in Spanish as a Qualified Bilingual Staff by

ALTA language services.