



June 28, 2017

Via email: CRISPR@mpegla.com

Mr. Lawrence A. Horn
President and CEO
MPEG LA, LLC
4600 S. Ulster St. Suite 400
Denver, CO 80237 USA

Dear Mr. Horn:

The Broad Institute shares the goal of developing innovative technologies such as CRISPR genome editing tools and promoting its translation into genomic medicines to benefit patients.

We are committed to making these technologies widely available for research to help ensure that therapeutic development — bringing this technology to the clinic — has the best chance of success and are working with our joint owners to license our CRISPR technology consistently.

For four years, we have made CRISPR tools, knowledge, methods and other IP for genome-editing freely available to the academic and non-profit community, and will continue to do so. In addition, we license CRISPR IP non-exclusively to companies to use in their own commercial research, and non-exclusively to companies wishing to sell tools and reagents for genome editing. For human therapeutics, we have developed an "[inclusive innovation](#)" model, which limits exclusivity to ensure CRISPR technology will be appropriately available for human therapeutics.

We were pleased to learn that MPEG LA was considering the creation of a CRISPR-Cas9 joint licensing pool and are interested in exploring participation, if consistent with our practice of simplifying and expanding, rather than restricting, access to these important tools and methods.

The Broad Institute hereby submits for evaluation of eligibility to participate in discussions facilitated by MPEG LA regarding creation of a CRISPR Joint Licensing Platform the ten (10) patent families described on the attached list, which include, *inter alia*, the following CRISPR-Cas9 patents:

US Patent No. 8,697,359
US Patent No. 8,771,945
US Patent No. 8,795,965
US Patent No. 8,865,406
US Patent No. 8,871,445
US Patent No. 8,889,356
US Patent No. 8,889,418
US Patent No. 8,895,308

US Patent No. 8,906,616
US Patent No. 8,932,814
US Patent No. 8,945,839
US Patent No. 8,993,233
US Patent No. 8,999,641
EP Patent No. EP2764103
EP Patent No. EP2771468
EP Patent No. EP2784162

EP Patent No. EP2825654
EP Patent No. EP2840140
EP Patent No. EP2896697
EP Patent No. EP2898075
EP Patent No. EP2921557
EP Patent No. EP2931898

The Broad Institute submits this application also on behalf of joint-owners of Broad filed CRISPR patents and patent applications including: Massachusetts Institute of Technology, President and Fellows of Harvard College, and The Rockefeller University each a joint-owner of one or more of the above referenced properties.

While there is no obligation or commitment from such submission, and only one patent asset needs to be submitted and determined eligible to qualify to participate in discussions, to underscore our commitment to making CRISPR technologies broadly available for research, we have included not only issued CRISPR-Cas9 patents, but more broadly relevant CRISPR patents and application filed by the Broad Institute that relate to this important technology.

Of course, these patent pools are only truly effective in streamlining the process and driving research forward if many parties participate. We know that our approach differs sharply from and is much more open than what we understand to be the case with licenses given by others.

We look forward to discussions with additional like-minded potential partners about opportunities to streamline licensing of CRISPR IP to ensure these technologies are freely available to the academic and non-profit community and reasonably and non-exclusively available to companies to use in their own commercial research or to sell tools and reagents, and, for human therapeutics, in a manner to encourage sufficient investment to develop fully CRISPR-gene editing technology to treat human diseases and to maximize patient benefit.

Please let us know when and where the meeting will take place, as representatives of Broad Institute and also of our current licensing partners are interested in joining this discussion.

Regards,



Ellen Law
Senior Advisor to the Director
The Broad Institute of MIT and Harvard
415 Main Street
Cambridge, MA 02142

cc: Dahlia Fetouh, Counsel, MIT Office of the General Counsel
Lesley Millar-Nicholson, Director, MIT Technology Licensing Office
Lauren Foster, Associate Director, MIT Technology Licensing Office
Diane Lopez, Deputy General Counsel, Harvard Office of the General Counsel
Vivian Berlin, Director of Business Development, Life Sciences, Harvard Office of Technology Development
Karen Sinclair, Director of Intellectual Property, Harvard Office of Technology Development
Deborah Yeoh, Vice President and General Counsel, The Rockefeller University Office of the General Counsel
Kathleen Denis, Associate Vice President, The Rockefeller University Office of Technology Transfer

Broad CRISPR-Cas9 Patent Portfolio, MPEG LA discussion

| Owner Name | Application Status | App Number | Pub Number | App Title | Inventors |
|-----------------------------------|--|-------------------|----------------|---|---|
| Broad, MIT, Harvard & Rockefeller | Granted and/or Pending in US, Europe, UAE, Australia, Brazil, Canada, China, Japan, Republic of Korea, Qatar, Russian Federation and Hong Kong. | PCT/US2013/074611 | WO 2014/093595 | CRISPR-CAS COMPONENT SYSTEMS, METHODS AND COMPOSITIONS FOR SEQUENCE MANIPULATION | Zhang, Feng; Bikard, David Olivier; Cong, Le; Cox, David Benjamin Turitz; Hsu, Patrick; Jiang, Wenyang; Lin, Shualiang; Marraffini, Luciano; Platt, Randall Jeffrey; Ran, Fei; Sanjana, Neville Esopi |
| Broad, MIT & Harvard | Granted and/or Pending in US, Europe, UAE, Australia, Brazil, Canada, China, Egypt, India, Israel, Japan, Republic of Korea, Mexico, Qatar, Russian Federation, Singapore, South Africa and Hong Kong. | PCT/US2013/074667 | WO 2014/093622 | DELIVERY, ENGINEERING, AND OPTIMIZATION OF SYSTEMS, METHODS AND COMPOSITIONS FOR SEQUENCE MANIPULATION AND THERAPEUTIC APPLICATIONS | Zhang, Feng; Haidenreich, Matthias; Ran, Fei; Switach, Lukas |
| Broad, MIT & Harvard | Granted and/or Pending in US, Europe, Australia, Canada, China, India, Israel, Japan, Republic of Korea, Singapore and Hong Kong. | PCT/US2013/074691 | WO 2014/093635 | ENGINEERING AND OPTIMIZATION OF IMPROVED SYSTEMS, METHODS AND ENZYME COMPOSITIONS FOR SEQUENCE MANIPULATION | Zhang, Feng; Ran, Fei; Shalem, Ophir |
| Broad, MIT & Harvard | Granted and/or Pending in US and Europe. | PCT/US2013/074736 | WO 2014/093655 | ENGINEERING AND OPTIMIZATION OF SYSTEMS, METHODS AND COMPOSITIONS FOR SEQUENCE MANIPULATION WITH FUNCTIONAL DOMAINS | Zhang, Feng; Cong, Le; Platt, Randall Jeffrey; Ran, Fei; Sanjana, Neville Esopi |
| Broad & MIT | Granted and/or Pending in US, Europe, UAE, Australia, Brazil, Canada, China, Japan, Republic of Korea, Qatar, Russian Federation and Hong Kong. | PCT/US2013/074743 | WO2014/093661 | CRISPR-CAS SYSTEMS AND METHODS FOR ALTERING EXPRESSION OF GENE PRODUCTS | Zhang, Feng |
| Broad, MIT & Harvard | Granted and/or Pending in US. | PCT/US2013/074790 | WO 2014/093694 | CRISPR-CAS NICKASE SYSTEMS, METHODS AND COMPOSITIONS FOR SEQUENCE MANIPULATION IN EUKARYOTES | Zhang, Feng; Cong, Le; Ran, Fei |
| Broad, MIT & Harvard | Granted and/or Pending in US, Europe, Australia, Canada, China, India, Israel, Japan, Republic of Korea, Mexico, Russian Federation and Hong Kong. | PCT/US2013/074819 | WO 2014/093712 | ENGINEERING OF SYSTEMS, METHODS AND OPTIMIZED GUIDE COMPOSITIONS FOR SEQUENCE MANIPULATION | Zhang, Feng; Cong, Le; Hsu, Patrick; Ran, Fei |
| Broad & MIT | Pending in US and Europe. | PCT/US2014/041806 | WO2014/204727 | FUNCTIONAL GENOMICS USING CRISPR-CAS SYSTEMS, COMPOSITIONS, METHODS, SCREENS AND APPLICATIONS THEREOF | Zhang, Feng; Shalem, Ophir; Sanjana, Neville Esopi; Doench, John; Root, David E.; Biewener Hartenian, Ella Nicole |
| Broad, MIT & Rockefeller | Pending in US, Europe, UAE, Australia, Brazil, Canada, China Egypt, India, Israel, Japan, Republic of Korea, Mexico, Qatar, Russian Federation, Singapore, South Africa. | PCT/US2014/070135 | WO2015/089465 | DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS FOR HIV AND VIRAL DISEASES AND DISORDERS | Bhatia, Sangeeta; Rice, Charles; Zhang, Feng; Cox, David Benjamin Turitz; Ramanan, Vyas; Schwartz, Robert; Shlomai, Amir |
| Broad & MIT | Pending as PCT filing (unexpired) and in US, Europe, Argentina, Taiwan and Hong Kong. | PCT/US2016/038034 | WO2016/205613 | CRISPR ENZYME MUTATIONS REDUCING OFF-TARGET EFFECTS | Zhang, Feng; Gao, Linyi; Zetsche, Bernd; Slaymaker, Ian |