Dear Shareholders

When I first joined Blueprint Medicines in 2014, the company was only three years old. In those early years, our scientists were singularly focused on building a new discovery platform, anchored in the core belief that there was a faster and more reproducible way to design highly selective and transformative kinase medicines. It was an exciting time, and our team worked hard to establish an early vision for building our business for the long-term. We set out to design medicines that exquisitely targeted the underlying molecular cause of cancer or rare diseases in specific populations and, with a portfolio-based business strategy, deliver multiple therapies to patients globally.

Now, only five years later, we are preparing to bring our first medicine directly to patients in the United States and Europe. This quarter, we plan to submit a New Drug Application (NDA) to the U.S. Food and Drug Administration (FDA) for our lead therapeutic candidate avapritinib, based on compelling data from our Phase 1 NAVIGATOR clinical trial. This first NDA for avapritinib – a highly selective KIT and PDGFRA inhibitor – will focus on two well-defined subsets of patients with advanced gastrointestinal stromal tumors (GIST) who have no approved treatment options: PDGFRA Exon 18 mutant GIST and fourth-line GIST. On the heels of this NDA, we also plan to submit a Marketing Authorization Application for avapritinib to the European Medicines Agency in the third quarter of 2019.

While this progress for avapritinib alone is significant, our vision has always been to deliver a portfolio of precision therapies to patients and their physicians. To this end, we announced our “2020 Blueprint” global business strategy earlier this year. Under this plan, by the end of 2020, we expect to have two marketed products in the U.S. and one marketed product in the EU, four additional marketing applications pending in the U.S. or EU, six therapeutic candidates in global clinical development, and up to eight research programs that leverage our strategic areas of focus.

Broad development programs for avapritinib and our second therapeutic candidate BLU-667, a highly selective RET inhibitor, are core components of this portfolio strategy. Beyond the initial indications for avapritinib for PDGFRA Exon 18 GIST and fourth-line GIST, we plan to submit marketing applications for third-line GIST and advanced systemic mastocytosis in 2020. In addition, registration-enabling trials for avapritinib are ongoing or planned in indolent SM and second-line GIST.

Similarly, we are rapidly advancing the development of BLU-667. In March, we announced encouraging top-line interim data and the early achievement of an enrollment target for our Phase 1 ARROW trial. These achievements have enabled us to accelerate plans to submit an NDA for previously treated RET-fusion non-small cell lung cancer (NSCLC) into the first quarter of 2020. In addition, we plan to submit a marketing application for BLU-667 for previously treated medullary thyroid cancer in the first half of 2020, while advancing the development of BLU-667 for first-line NSCLC and other RET-altered cancers.
In addition, we have two more therapeutic candidates – BLU-554 for advanced hepatocellular carcinoma and BLU-782 for fibrodysplasia ossificans progressiva – in early-stage trials and multiple undisclosed discovery programs either wholly owned or partnered under our cancer immunotherapy collaboration with Roche. Altogether, these programs position us well to rapidly advance and expand our portfolio. Later this year, we plan to highlight our portfolio expansion strategy at our first Research and Development Day for the investor community.

With potential approvals for avapritinib and BLU-667 on the horizon, we are increasingly focused on building effective and scalable commercial capabilities. In addition to establishing a commercial leadership team – led by our Chief Commercial Officer, Christina Rossi – we are engaging with physicians and patients to better understand their needs and tailor our commercial strategy to meet them. These efforts include a focus on increasing rates of tumor mutation testing, which has the potential to enable a more complete diagnosis, identify patients eligible for treatment and improve outcomes.

Underpinning our portfolio expansion and commercial plans is a strong financial foundation. We ended 2018 with $494.0 million in cash, cash equivalents and investments, and in April 2019, we closed an underwritten public offering with estimated net proceeds of $327.2 million. Altogether, based on our existing operating plans, we expect our existing cash will be sufficient to fund operating expenses and capital expenditure requirements into the middle of 2021, through multiple potential regulatory approvals and the recognition of potentially meaningful product revenue. Ultimately, we believe our “2020 Blueprint” strategy has the potential to spark a sustainable innovation cycle, with reinvestment of product revenue in our scientific platform and expansion of our portfolio with new medicines that can benefit even more patients.

Reflecting on these last five years, it’s exciting to see our original vision for Blueprint Medicines come into focus, as we prepare for multiple potential regulatory approvals and the launch of an integrated, global business. We are grateful to our employees, scientific and clinical collaborators, board members and stockholders for their continued support as we work to make a meaningful impact on the lives of patients. Most importantly, I want to thank the patients and families who have participated in our clinical trials, without whom we would not be able to bring forward new treatment innovations.

Jeff Albers
President and Chief Executive Officer
Our research focuses on distinct areas where we believe we can significantly advance medicine and improve patient outcomes. Across these areas, we combine a rich universe of kinase targets with significant scientific, clinical and commercial expertise.

- Gastrointestinal stromal tumors
- Non-small cell lung cancer
- Medullary thyroid cancer
- Hepatocellular carcinoma
- Systemic mastocytosis
- Fibrodysplasia ossificans progressiva

Up to 5 programs under our collaboration with Roche

A broad global portfolio of precision therapies:

- 2 marketed products
- 4 pending marketing applications
- 6 clinical-stage therapeutic candidates
- 8 research programs

Our “2020 Blueprint” strategy establishes a planned path to transform Blueprint Medicines, by the end of 2020, into a global commercial enterprise focused on delivering a portfolio of precision therapies to patients with cancer and rare diseases.
Our proprietary scientific platform empowers the rapid and reproducible design of precision therapies that selectively target kinase drivers of disease. Currently, we are evaluating four investigational medicines in clinical trials across multiple patient populations.

**AVAPRITINIB**
- FGFR1 & Kit

**BLU-554**
- FGFR4

**BLU-667**
- RET

**BLU-782**
- ALK2
We are rapidly advancing multiple investigational medicines across a broad range of genetically defined cancers and rare diseases:

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<tr>
<th>Avapritinib (KIT &amp; PDGFRα)</th>
<th>PDGFRα Exon 18 mutant GIST</th>
<th>4L GIST</th>
<th>3L GIST</th>
<th>2L GIST</th>
<th>Advanced systemic mastocytosis</th>
<th>Indolent and smoldering systemic mastocytosis</th>
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<tr>
<th>BLU-667 (RET)</th>
<th>2L RET-fusion NSCLC</th>
<th>1L RET-fusion NSCLC</th>
<th>EGFR-mutant NSCLC (+osimertinib)</th>
<th>2L RET-mutant MTC</th>
<th>Other RET-altered solid tumors</th>
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<th>BLU-554 (FGFR4)</th>
<th>Advanced HCC</th>
<th>Advanced HCC (+CS-1001)</th>
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<th>BLU-782 (ALK2)</th>
<th>Fibrodysplasia ossificans progressiva</th>
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<th>4 wholly owned programs</th>
<th>Undisclosed targets</th>
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<th>Up to 5 cancer immunotherapy programs</th>
<th>Undisclosed targets</th>
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1. Unresectable or metastatic disease.
2. Stone Pharmaceuticals has exclusive rights to develop and commercialize avapritinib, BLU-554 and BLU-667 in Mainland China, Hong Kong, Macau and Taiwan. Blueprint Medicines retains all rights in the rest of the world.
3. In collaboration with Roche. Blueprint Medicines has U.S. commercial rights for up to two programs. Roche has worldwide commercialization rights for up to three programs and ex-U.S. commercialization rights for up to two programs.