

December 23, 2011

Dear Fellow Shareholders,

As 2011 draws to a close and much of the world is in holiday mode, OXiGENE continues to pursue its corporate goals, including securing financing to pursue our proposed major clinical program in anaplastic thyroid cancer (ATC), as well as our earlier stage programs. In recent weeks, we have made two major announcements that we believe significantly advance our company. We announced the establishment of a three-year stock purchase agreement, under which we have the right to sell up to \$20 million in our common stock from time to time to Lincoln Park Capital, LLC. We also announced establishment of a partnership agreement with Azanta A/S to provide access to ZYBRESTAT for the treatment of patients in Europe and Canada with ATC on a compassionate use basis. I'd like to offer some perspective on these two events.

The agreement with Lincoln Park Capital is beneficial to OXiGENE in several important ways. It has the potential to provide a large portion of the funding we will need over the next few years to operate with our current structure and programs, and to pursue our planned pivotal Phase 3 study in anaplastic thyroid cancer (FACT 2). We believe that this agreement underscores the therapeutic and commercial potential of ZYBRESTAT in ATC, a potentially a new treatment for a very rare tumor, for which both the FDA and the EMA have granted orphan drug status. This agreement also confirms that there are investors who believe that OXiGENE's pipeline, development programs and experienced team represent a worthwhile investment, with the potential to create significant value for patients and for shareholders.

What we particularly like about the structure of this purchase agreement is that it provides us with a source of funding over the next three years without being significantly dilutive in the near term, or requiring a commitment of future royalties or intellectual property rights. Those obligations, which are often required in debt-based financing arrangements, would not be favorable for OXiGENE or its shareholders, as they could represent obstacles to future partnering or additional financing activities. So, we are pleased to have put in place an alternative financing structure that we believe is in the best interest of our current as well as future investors.

The distribution agreement with Azanta also provides meaningful benefit to our company. The creation of a Named Patient Program (NPP), to be managed by Azanta, provides a regulatory mechanism to allow healthcare professionals in the European Union, including the Nordic countries, Switzerland, and Canada, to prescribe ZYBRESTAT solely to treat individual ATC patients while it is still in development and until ZYBRESTAT obtains marketing approval in these countries. Azanta is a privately held European specialty pharmaceutical company with specialized technical and regulatory expertise in implementing compassionate use programs. We and Azanta will cooperate on regulatory activities relating to ZYBRESTAT for the treatment of ATC. We see this agreement as an important milestone in the ongoing development of ZYBRESTAT, consistent with our commitment to facilitate access to this potentially valuable therapy by ATC patients who

have no other treatment options. We believe that our collaboration with Azanta will be productive, especially given their distribution and regulatory expertise outside of the US, and we are delighted to work with them.

We continue to believe that ZYBRESTAT has potential as an important therapeutic option for cancer patients, and that ATC, as an orphan indication, represents a meaningful commercial opportunity for OXiGENE to pursue. An encouraging trend in the biopharmaceutical industry is that more and more drug companies, including some of the largest players, are specifically targeting orphan diseases as strategic target areas. A number of factors make these diseases attractive business opportunities.

There is less competition in the orphan disease area. For example, for a company pursuing a treatment of breast cancer, there is significant competition among scores of companies trying to recruit patients while clinical trial participation rates are diminishing and the cost per patient is rising.

In the area of orphan diseases, potentially attractive reimbursement rates from insurers can make approved treatments commercially viable. In addition, there are potential regulatory advantages in orphan indications, such as the possibility that only a single Phase 3 study may be required for approval, and a 7-year marketing exclusivity period, plus the potential for additional healthcare policy changes in the future that may further benefit orphan disease drug development.

These reasons, as well as the fact that relatively limited marketing organizations are needed to serve the clinical institutions where the majority of rare diseases are treated, provide opportunities for smaller biotech companies, either alone or working in partnership with another organization, to commercialize a newly approved therapy for an orphan indication.

These market incentives, in addition to the agreement we have secured from Lincoln Park Capital, provide OXiGENE with the impetus and resources to continue to pursue development of ZYBRESTAT in ATC. Because of the small number of patients affected by this disease, our plan will be to design a global development program. This will require establishing a clinical and regulatory organization, including a mix of internal staff and external contract development organizations, to interact with clinical institutions and regulatory bodies in multiple locales. Our goal will be to broaden our reach and accelerate enrollment to the extent possible in order to conduct the FACT 2 study within a reasonable timeframe.

In terms of next steps, we plan to continue to finalize the design of the pivotal FACT 2 trial, enlist the support of investigators and cooperative groups worldwide to participate in the trial once the protocol is finalized and, as appropriate, discuss these plans with the FDA and other regulatory bodies. We intend to continue to make progress with our other clinical and earlier stage programs. At the same time, we intend to continue to pursue additional financing opportunities that could strengthen our ability to pursue our development goals.

As always, our Board of Directors, management team and staff express our appreciation to the patients and clinicians who are participating in our trials, and to our shareholders who continue to support our company. We wish everyone happy and healthy holidays, and look forward to continuing to keep our shareholders worldwide informed of our progress.

Sincerely,

Peter Langecker, M.D., Ph.D.
Chief Executive Officer

This communication contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Any or all of the forward-looking statements in this letter, which include possible outcomes of clinical studies involving ZYBRESTAT, interest among potential partners or regulatory filings and outcomes, may turn out to be wrong. Forward-looking statements can be affected by inaccurate assumptions OXiGENE might make or by known or unknown risks and uncertainties, including, but not limited to, the outcome of clinical studies and the availability of additional financing to continue development of ZYBRESTAT. Additional information concerning factors that could cause actual results to materially differ from those in the forward-looking statements is contained in OXiGENE's reports to the Securities and Exchange Commission, including OXiGENE's reports on Form 10-K, 10-Q and 8-K. However, OXiGENE undertakes no obligation to publicly update forward-looking statements, whether because of new information, future events or otherwise. Please refer to our Annual Report on Form 10-K for the fiscal year ended December 31, 2010.