



Genzyme Corporation

500 Kendall Street
Cambridge, MA 02142

These statements speak only as of the date of this letter to shareholders.

December 10, 2009

Dear Fellow Shareholder:

As 2009 comes to a close and we look ahead to 2010, we want to provide you with an update on the current status and future direction of the company. This year has been the most challenging one in our 28-year history due to setbacks in our manufacturing operations. From these challenges came opportunities to learn and to engage with our key constituencies – our patients and physicians, our shareholders and employees. We have learned some important lessons and are acting decisively to improve our manufacturing, quality and regulatory operations. Importantly, we are aggressively taking a proactive approach to risk management.

Genzyme has made meaningful progress this year in making organizational changes and operational improvements and significantly reducing risk in our manufacturing operations. We expect to emerge a stronger company that is better prepared to deliver on our commitment to sustainable growth.

Addressing Manufacturing Operations

We faced two challenges at our Allston Landing manufacturing facility; the first related to compliance issues and the second related to a temporary facility shutdown due to a rare virus. While these two items are independent, we realize there was increased stress placed on the plant due to the introduction of Myozyme production. We based our decision to place Myozyme in Allston on the need to immediately supply patients with this lifesaving new therapy. We intended Allston to serve as a temporary solution until completion of a new facility in Belgium, which could sufficiently supply global demand.

By placing Myozyme production in Allston, we operated with lower-than-normal Cerezyme and Fabrazyme inventory levels. Because we had a 20-year track record of successfully manufacturing biologics, we did not anticipate being affected by the rare virus. The low inventory levels were insufficient to bridge the time necessary to shutdown and sanitize the facility. This temporary interruption ultimately affected our ability to supply the market. We have now moved all Myozyme production to our Belgium facility. Allston is focusing on Cerezyme and Fabrazyme production, thereby decreasing the risk of this situation happening again.

This fall we made significant progress in resuming operations at the Allston plant and have successfully produced both Cerezyme and Fabrazyme. We resumed Cerezyme shipments in November and anticipate our first Fabrazyme shipments in late December. These are crucial developments in restoring the supply of our



products and ensuring that patients have full access to treatments as soon as possible.

Our goal is to restore Allston to world-class standards and establish best practices throughout Genzyme's global manufacturing organization. This effort has the highest level of management attention. Working with a leading quality assurance advisory firm, we developed a comprehensive strategy and two-year plan that will significantly lower the probability of another setback. We are implementing the plan with a sense of urgency and are making progress every day.

Comprehensive Manufacturing Operations Plan

- 1) Risk Mitigation: After we identified the rare virus, which was previously undetectable, we developed an assay to detect it and began using this test throughout the production process. We put additional safeguards in place before re-starting the plant. We continue to evaluate other ways to further lower our manufacturing risk including treating raw materials through irradiation or UV light and developing new manufacturing processes that would avoid the need for certain raw materials. Some of these steps require FDA and other health authority approvals, and are expected to come on line beginning in 2010.
- 2) Capacity Expansion: Our plan is to have sufficient inventory on-hand to absorb any future unanticipated facility shutdowns. Genzyme began to invest in a number of new facilities during the past decade. We are completing a new cell-culture facility in Framingham that will begin to provide additional capacity for Fabrazyme and Cerezyme in 2011. We expect to begin engineering runs in early 2010 followed by process validation runs that are required for approval during the second half of the year. In our Belgium facility, we are adding another 4000L reactor for Myozyme that is expected to be on line in mid-2011. We are actively evaluating additional sources of existing capacity for Myozyme to support its future potential. Beyond bulk production, we are removing our fill/finish capabilities from the Allston facility and expanding our capabilities in our Waterford facility. We are on-track to install equipment next year and expect approval in 2011. These expansion efforts collectively will increase our capacity four-fold. Importantly, there will be redundancy that supports operational flexibility and the future growth of our products.
- 3) Organizational Renewal: We are enhancing our quality programs through organizational changes and employee training. Last May we added senior leadership by placing direct oversight of Corporate Operations under David Meeker, M.D., Executive Vice President. We moved Sandra Poole, Senior Vice President, to lead the Allston plant as part of the large reorganization of the management team at the facility. Sandra recently led Genzyme's state-of-the-art Belgium facility from construction to European approval. We also plan to make significant investments throughout 2010 within the organization. We are actively recruiting new leaders of Corporate Operations, Quality Assurance, and Supply Chain Management who we expect will be in place in



early 2010. Finally, we are systematically reviewing all Genzyme facilities to identify and implement process improvements, and are enhancing our employee training programs. Our employees at every level are motivated and focused on getting this right.

Strengthening Operational Leadership

To create the organizational capacity to deliver future growth, we are strengthening our internal structure and expertise to match our increasing size, complexity, and global reach. Early in 2009, we launched the Business Excellence Initiative (BEI) to ensure the corporation has the world-class processes and capabilities we need to be successful. We appointed Ann Merrifield, a senior executive who previously ran two of our business units, to lead BEI. Ann and her team have completed an in-depth organizational assessment working with a leading advisory firm. Based on this evaluation, BEI and senior management are developing and implementing actions to continuously improve the way we do business.

To provide enhanced focus on the management of day-to-day operations, we have consolidated oversight for most of Genzyme's commercial and manufacturing operations under three executives who report to the CEO:

- David Meeker, M.D., Executive Vice President, is overseeing the Genetic Diseases and Biosurgery business units, as well as Corporate Manufacturing Operations.
- John Butler, Senior Vice President, is overseeing the Cardiometabolic & Renal business unit.
- Mark Enyedy, Senior Vice President, is overseeing the Transplant, Hematologic Oncology, and Genetic Testing business units along with the alemtuzumab development program.

We have brought in new senior managers to the Biomedical & Regulatory Affairs organization to strengthen support for our marketed products and the development of new products within the pipeline.

- Pamela Williamson has assumed the role of Senior Vice President and Global Head of Regulatory Affairs and Corporate Quality Compliance. Prior to joining Genzyme, Ms. Williamson was Vice President of Regulatory Affairs and Quality Assurance for Serono, Inc. where she was responsible for development of U.S. regulatory strategy, registration of drugs and biologics and post-marketing support for the therapeutic areas of Reproductive Health, Metabolic Endocrinology, Neurology, and Oncology.
- Ulrich Goldmann, M.D., joined Genzyme as Senior Vice President of Global Medical Affairs, responsible for leading the Medical Affairs function across all businesses and affiliates. Dr. Goldmann was previously Vice President and Global Head of Medical Affairs with Novartis Pharmaceuticals where his responsibilities covered Global Health Economics / Outcomes Research, Global Scientific Operations, Strategic Medical Planning and Global Medical Information & Communications.



- Andrew Lee joined Genzyme as Senior Vice President for Clinical Research, responsible for Global Clinical Operations. Mr. Lee was previously Vice President with Pfizer where he held a variety of leadership positions, including Global Head of Clinical Study and Data Management, Global Head of Clinical Study Operations, and Global Clinical Project Management and Clinical Quality Management.
- Michael Panzara, M.D., M.P.H., joined Genzyme as Therapeutic Area Head and Group Vice President for Multiple Sclerosis and Immune Diseases, responsible for the clinical development of alemtuzumab. Dr. Panzara was previously Chief Medical Officer for Neurology with Biogen Idec where he was responsible for development of late-stage neurology products, including pegylated interferon, Tysabri, and BG-12.

Finally, the Board of Directors recently appointed a new member, Robert Bertolini, who was Executive Vice President and Chief Financial Officer at Schering-Plough Corp. until its recent merger with Merck & Co. Mr. Bertolini joined Schering-Plough during a time when it was facing challenges across several areas. He was part of the team that turned the company around and drove strategic decisions that more than doubled its adjusted net sales from \$8.6 billion in 2004 to \$20.8 billion in 2008.

Delivering on Sustainable Growth

The manufacturing setback this year overshadowed our performance as one of the leading biotechnology companies, with a strong history of growth. Our focus on developing innovative treatments with high clinical value in diseases where options are inadequate or do not exist has resulted in 12 market-leading products. These products generated over 19% compounded annual revenue growth for the last decade. Most of the products are still in their growth phases, such as Aldurazyme, Clolar, Fabrazyme, Myozyme, Septra, Synvisc-One, Mozobil, Thymoglobulin, and Thyrogen.

During 2009, we achieved several milestones that add to our growth outlook, including:

- Launching new products, such as Mozobil for stem cell mobilization, Synvisc-One for osteoarthritic pain in the knee, and Renvela for hyperphosphatemia in both dialysis and pre-dialysis patients in Europe.
- Advancing our late-stage pipeline by completing enrollment in the phase 3 alemtuzumab program in multiple sclerosis and the phase 2b ataluren trial for Duchene's muscular dystrophy, initiating the phase 3 GENZ-112638 program for Gaucher disease, and announcing phase 3 mipomersen data in homozygous familial hypercholesterolemia. We believe these are exciting programs that have the ability to shape their respective markets.
- Agreeing with the FDA on a regulatory path for 4000L Lumizyme (Myozyme) for Pompe disease. We are working toward an approval in 2010.



Our recovery is underway and we are executing on our plan to complete this process and resume our growth. Our business model is sound and we have a clear and coherent long-term strategy to grow our product portfolio, develop our R&D pipeline, and efficiently allocate our capital. We recently completed a thorough evaluation of our short- and long-term executive incentive plans to better align our compensation with the interests of our shareholders. We expect these changes to become effective in 2010.

The employees at Genzyme take great pride in the company's accomplishments over the past two decades and the difference we have made in the lives of patients around the globe. We are dedicated to making the changes and investments necessary to ensure the recent setbacks never occur again. We are executing on a comprehensive plan to build an organization that can sustain our tremendous productivity and innovation and drive our future growth.

Sincerely,

A handwritten signature in black ink, appearing to read "Henri A. Termeer".

Henri A. Termeer
Chairman and Chief Executive Officer

A handwritten signature in black ink, appearing to read "Robert J. Carpenter".

Robert J. Carpenter
Lead Independent Director

This letter to shareholders contains forward looking statements regarding Genzyme's future business plans and strategies, including without limitation its: expected timing for shipping Cerezyme; plans to implement processes to lower manufacturing risk; plans and expected timing for increasing bulk manufacturing capacity for Cerezyme, Fabrazyme and Myozyme and expanding fill/finish capabilities; plans to make investments in the organization, including expected timing for filling several senior manager positions; and expected timing for receiving FDA approval of 4000L Lumizyme (Myozyme). These forward looking statements are subject to risks and uncertainties that may cause actual results to differ materially from those forecasted. These risks and uncertainties include: that Genzyme encounters additional manufacturing problems due to any reason, including bacterial or viral contamination, mechanical failures, cell growth at lower than expected levels, and regulatory issues; that Genzyme is unable to obtain regulatory approvals for new manufacturing processes and manufacturing capacity in the expected timeframes or at all; that Genzyme is unable to attract or retain the personnel necessary to achieve its operational objectives; that Genzyme is unable to secure regulatory approval for 4000L Lumizyme (Myozyme) in the expected timeframe or at all; and the risks and uncertainties described in reports filed by Genzyme with the Securities and Exchange Commission under the Securities Exchange Act of 1934, as amended, including without limitation the information under the heading "Risk Factors" in Genzyme's Quarterly Report on Form 10-Q for the quarter ending September 30, 2009. Genzyme cautions investors not to place substantial reliance on the forward-looking statements contained in this letter to shareholders. These statements speak only as of the date of this letter to shareholders, and Genzyme undertakes no obligation to update or revise these statements.



Important Information

Genzyme, its directors, and the other individuals identified in its preliminary proxy statement filed with the SEC on March 22, 2010, may be deemed to be participants in the solicitation of proxies from Genzyme's shareholders in connection with the company's 2010 annual meeting of shareholders. Information about the directors and other individuals and their interests can be found in the preliminary proxy statement, a copy of which is available at the SEC's web site at www.sec.gov.

Genzyme shareholders are advised to read carefully the company's definitive proxy statement relating to the company's 2010 annual meeting of shareholders and any other relevant documents filed by the company with the SEC, when they become available, before making any voting or investment decision, because they will contain important information. The definitive proxy statement and other reports, when available, can be obtained free of charge at the SEC's web site at www.sec.gov or from Genzyme at www.genzyme.com. A copy of the company's definitive proxy statement will also be available for free by writing to Genzyme Corporation, 500 Kendall Street, Cambridge, MA 02142. In addition, copies of the proxy materials may be requested from our proxy solicitor, Innisfree M&A Incorporated, 501 Madison Avenue, 20th Floor, New York, NY 10022, (212) 750-5833.