November 1, 2016 marks the 50th anniversary of the establishment of the National Institute of Environmental Health Sciences (NIEHS) (the Division of Environmental Health Sciences was founded at this time and in January, 1969 it was elevated to institute status) (Hawkins, 1987). In the first week of December 2016, NIEHS will host the first ever Environmental Health Science FEST (EHS FEST; Facilities, Engagement, Science, and Training) in Durham, North Carolina, to commemorate this special milestone. The EHS FEST will bring together NIEHS-funded grantees and partners that span the range of environmental health sciences. The field of toxicology, the Society of Toxicology (SOT), and scientists interested in the adverse effects of chemicals on human health have all tremendously benefited from this component of the National Institutes of Health (NIH) located in the Research Triangle Park, North Carolina. The founding of NIEHS did more than just bolster research into the environmental contributors of disease; it was instrumental in the development of one of the most influential research and scientific parks in the world. Touted as one of the most successful settings for scientific and technical innovation, Research Triangle Park (RTP) has been home to NIEHS since 1966. NIEHS was one of the anchor tenants along with International Business Machines (IBM) and Chemstrand Corporation (inventors of Astroturf). The credibility of an NIH institute was critical to the formation and evolution of one of the most revered knowledge hubs in the world.

The vertices that make the triangle of the RTP are represented by three of the most academic research institutions: Duke University in Durham, North Carolina State University in Raleigh, and the University of North Carolina at Chapel Hill. The fact that the geometry is anchored by institutions of higher education is both symbolic and a driver of what was envisioned to materialize within the triangle. Over the past few years, several Nobel Prizes have been awarded to scientists based in the RTP. Although it is difficult to determine the impact of the RTP on the recruitment and retention of those awardees, without the lure of the RTP many of these investigators may not have been drawn to this area. The establishment of NIEHS 50 years ago, and its continued presence, has catalyzed a level of discovery and knowledge that likely would not have occurred without it.

Some have regarded the location of NIEHS outside of the main NIH campus in Bethesda, MD, as a disadvantage. However, that ignores the transformative impact that NIEHS has had on the Research Triangle Park area and the visionary planning of its founders. When the RTP was established, occupants were required to retain 95% of the land for greenspace. One can view the campus of NIEHS as a scientific oasis. Anyone who has walked the path around the lake or peered out at the Environmental Protection Agency (EPA) scientific headquarters over lunch recognizes the symbolic and real advantages of the location. This is especially true when one compares it with the stifling sprawl on the NIH campus in Bethesda, Maryland, the chaos of the Metro Red Line, and the hustle and bustle of life in the shadow of our nation’s capital. As we grapple with urban expansion, we see the prescience of this decision by the RTP leadership. Although there have been challenges in housing and commercial development, the RTP has come to exemplify the balance one strives for in land use and development. NIEHS within the RTP demonstrates the way to conduct top-notch technical research that is in harmony with nature.

From a scientific perspective, NIEHS is special because of its invaluable commitment to basic and translational research as it relates to environmental impacts on health. For basic research scientists, NIEHS has steadfastly proven through its financial support that it recognizes that from basic sciences emerge medically relevant discoveries, and that the understanding of basic biological processes is essential for understanding the impact of environmental exposures on the development of disease and treatment. NIEHS stands as proof of the critical nature of a government-run agency in supporting research on how the environment affects people as to promote healthier lives. Although we have not
performed cost accounting on the total benefits of the NIEHS enterprise in mitigating and treating environmentally related diseases, we need only to survey few examples, such as the removal of lead (Pb) from paint and gasoline.

It is estimated (Gould, 2009) that each dollar invested in lead paint hazard control led to a return of $17–$221 or net savings of $181–269 billion in the US alone. And beyond the economic impact, we now fully recognize and appreciate the strong and robust relationships between reduced blood lead levels and health outcomes. We continue to be reminded as events unfold in Flint, Michigan, and elsewhere, that we must remain vigilant of our central mission to protect human health, especially the voiceless and the most vulnerable amongst us.

A central aim of the SOT mission is to shape the future of toxicological science and practice, and to disseminate toxicologically relevant information to scientists and stakeholders. As such, approximately 8000 members of the society participate in the Society’s annual meeting, where they meet as a family of scientists, and as a family of science advocates to discuss their accomplishments and future plans. The SOT celebrated its 50th anniversary in 2011 and there was much reflection over what was accomplished over that time. So much of what SOT celebrated was attributed to the support of NIEHS. The relationships between the SOT and the NIEHS have been intertwined. Many SOT members are funded by NIEHS. Many NIEHS scientists participate in SOT meetings and activities including serving as chairs of symposia and workshops at the national meeting. The SOT and its members have had significant input into the reorganization of NIH study sections. NIEHS scientists and leaders have served in the SOT Council.

The future of toxicology has also been reliant on the leadership and funding of NIEHS. The institutional training grants (T32s) have helped us to create, expand, and support training programs in toxicology and associated disciplines for decades. From a career development perspective, NIEHS and its relationship with the RTP exemplify the goals of our field. We train students and fellows for careers in academia, government, and industry. We acknowledge the importance of industrial production, regulatory decision-making, and basic discovery. From its outset, the RTP has been a microcosm of this triad.

Looking over the past several years of papers in Toxicological Sciences, NIEHS is the leading source of funding for those research studies. The authors wonder if the journal could have existed without the driving force of NIEHS. Whether you look at the members of the editorial board or the general membership of the Society of Toxicology, no other single institution has provided as much value to the Society as NIEHS. We are certain that the next 50 years of the NIEHS and its close partnership with the SOT will be as storied and successful as the last 50 years. Toxicology has come a long way since the early days of lethal dose (LD50) studies. Indeed, our improved understanding of the mechanistic effects of environmental drives of health will become even more important as we run into the intellectual borders/constraints of genetic explanations of disease.

One merely needs to examine the mission statements of the SOT and NIEHS to see the striking similarities.

SOT mission statement:
The society’s mission is to create a safer and healthier world by advancing the science and increasing the impact of toxicology.

NIEHS mission statement:
The mission of the NIEHS is to discover how the environment affects people in order to promote healthier lives.

Our missions are intertwined, our people overlap, and we share a vision of improved human and planetary health. We both are driven to better understand the effects of the environment on human health. We both hold sound science as the basis for decision-making. With innovative research supported by NIEHS, the toxicology community will solve critical problems regarding the environmental impact on health. The daunting challenges of today will likely become routine practice when NIEHS celebrates its 100th anniversary in 2066. The partnership between SOT and NIEHS will continue along this storied path with the collaboration characterized by a combination of symmetry and synergy. Both institutions have benefited from this fruitful interaction. On behalf of the editorial board of Toxicological Sciences, we congratulate NIEHS on its 50th anniversary and look forward to the next 50 years of collaboration.

REFERENCES