PROJECT INNOVATION
Cancer Cures Are Born of Medical Innovation

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Project Innovation Launches the Cancer Medicines Interactive Timeline to Highlight the Need for Continued Cancer Innovation in the U.S.

Washington, DC [November 20, 2014] – In recognition of decades of medical progress in the country's fight against cancer, a national group of healthcare stakeholders called the Cancer Innovation Coalition (CIC) today launched the *Cancer Medicines Interactive Timeline*, a web-based journey through significant medical advances that transformed a cancer diagnosis from an almost certain death sentence in the 1970s to a time when more people are surviving cancer than ever before. This important progress reflects breakthroughs across the continuum of care – from screening, early detection, chemotherapy, surgery, radiation and now molecularly targeted and "immune-based" therapies.

Created as part of Project Innovation, a new campaign spearheaded by the Cancer Innovation Coalition to elevate cancer innovation as a national priority, the *Cancer Medicines Interactive Timeline* highlights 28 groundbreaking developments – from the first radium cures at the beginning of the 20th Century to new genomics-based therapies that now make it possible to precisely target cancer cells and block their growth or destroy them entirely – that have made it possible for the number of cancer survivors to grow to almost 14 million today. As such, the interactive guide represents a "teachable moment" to educate Americans about what cancer innovation has achieved and why accelerating the pace of research is needed to deliver more promising new cancer treatments to patients quickly and save lives. The *Cancer Medicines Interactive Timeline* is available on the Project Innovation website at https://projectinnovation.org/timeline.php.

Top Cancer Innovation Milestones Change the Face of Cancer
Tracing medical advances in cancer back to 1898 when Marie and Pierre Curie discovered radium, the *Cancer Medicines Interactive Timeline* zeroes in on 1947 as the first time chemotherapy achieved a partial remission in childhood cancer patients and 1949 when the Food and Drug Administration (FDA) approved the first chemotherapy agent, nitrogen mustard or mustard gas, for the treatment of Hodgkin lymphoma.

From these early days, the timeline showcases important milestones in cancer innovation in the 1950s and 1960s, including the game-changing discovery in 1958 that administering multiple drugs at the same time can cause remission in children and adults with leukemia. However, it was the passage of the National Cancer Act of 1971 that mobilized the nation to invest in cancer research, producing an extraordinary record of scientific discovery over the next four decades. Collectively these advances have contributed to cancer deaths falling by 20 percent since 1991 while life expectancy for cancer patients has increased by 4 years between 1988 and 2000, translating to roughly 23 million additional life years and $1.9 trillion in value added to the economy.

As demonstrated by the *Cancer Medicines Interactive Timeline*, the return on investment from cancer innovation has been substantial. The following are some of the major milestones featured in the timeline:

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- ***A cure for Hodgkin Lymphoma- 1965*** – In the 1960s, cancer was usually treated with surgery or radiation. This changed after National Cancer Institute (NCI) researchers showed combining four drugs – mechlorethamine, vincristine (Oncovin), procarbazine and prednisone, a regimen named MOPP – produced long-term remissions in more than 50 percent of adults with advanced Hodgkin lymphoma. This discovery ultimately led to an even more effective combination chemotherapy regimen and cure rates as high as 90 percent.

- ***Introduction of adjuvant chemotherapy- 1975*** – The discovery that chemotherapy after surgery (adjuvant chemotherapy) prolongs the lives of women with early-stage breast cancer led to approval of tamoxifen and other adjuvant treatments for postmenopausal women following breast cancer surgery and later, to adjuvant therapy to reduce recurrences and deaths from colon cancer.

- ***New treatment cures men with testicular cancer- 1977*** – 50 years ago, 90 percent of men with advanced testicular cancer died within a year; now more than 90 percent are cured. This dramatic improvement resulted from the discovery that a combination regimen called PVB (cisplatin, vinblastine and bleomycin) produced complete remissions in almost three in four men with aggressive testicular cancer. Later, PVB was replaced by an even more potent chemotherapy regimen, making testicular cancer one of oncology's biggest success stories to date.

- ***Powerful anti-nausea drugs alleviate a major side effect of cancer treatment- 1991*** – For decades, cancer treatment was notorious for long hospital stays and severe side effects, sometimes forcing patients to cut their treatment short. But a dramatic shift occurred when FDA approved ondansetron (Zofran) and other antiemetic drugs to prevent the nausea and vomiting in patients undergoing chemotherapy. Due to this innovation, most patients now undergo treatment in outpatient settings and many continue to work and take part in other normal activities.

- ***First biologic to treat cancer- 1997*** – The discovery of rituximab (Rituxan) to treat patients with B-cell non-Hodgkin lymphoma (NHL) produced the first biologic cancer therapy. This demonstrated the ability of biotechnology to develop cancer therapies that are more precise and therefore, more effective and less toxic than chemotherapy agents.

- ***The game-changer in cancer treatment- 2001*** – The introduction of imatinib (Gleevec) transformed chronic myelogenous leukemia (CML) from a once deadly blood cancer to a chronic condition managed by a daily pill. Today, five-year survival rates for CML have reached almost 90 percent and imatinib's success has sparked a new era of research focused on treatments that target a cancer cell's specific molecular defects – and spare surrounding healthy cells.

- ***Targeted therapies for colon cancer- 2004-2008 –*** After scientists identified a protein on cell surfaces called the epidermal growth factor receptor (EGFR) that can cause cancer, research led to approval of two anti-EGRF antibody therapies for metastatic colon cancer, cetuximab (Erbitux) and panitumumab (Vectibix). This development was reinforced by studies showing that patients with a mutated KRAS gene are unlikely to respond to these drugs, making it possible for physicians to target the use of these therapies to patients who will benefit from treatment.

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- ***Vaccine approved to prevent cervical cancer- 2006 –*** With approval of the first vaccine against strains of the human papillomavirus (HPV) that cause most cervical cancers, biomedical discovery has made it possible to prevent cervical cancer, one of the top killers of women worldwide.

- ***Treatment advances in melanoma- 2010-2014 –*** Based on studies showing the targeted therapy ipilimumab (Yervoy) improves survival and delays the progression of advanced melanoma, this new treatment advance was approved in 2010. This led to further innovation and the approval in 2013 of two additional therapies – trametinib (Mekinist tablets) and dabrafenib (Tafinlar capsules) – designed to treat advanced melanoma triggered by the mutation of a specific gene called BRAF. Building on these advances, more research showed the combination of trametinib and dabrafenib increases survival in patients with inoperable or metastatic melanoma, resulting in FDA granting accelerated approval of this combination therapy in 2014.

- ***New therapies for late stage lung cancer patients- 2013-2014 –*** After scientists identified a defect in a gene called ALK (anaplastic lymphoma kinase) as the cause of a form of non-small cell lung cancer (NSCLC), drug innovators used this greater understanding of the underlying molecular pathways of NSCLC to develop specific targeted therapies for patients who are ALK-positive. As a result, FDA approved crizotinib (Xalkori) in November 2013 and ceritinib (Zykadia) in April 2014 as new treatment options for NSCLC patients who are ALK-positive and have late-stage metastatic disease.

About the Cancer Innovation Coalition and Project Innovation
Managed by the National Patient Advocate Foundation (NPAF), the Cancer Innovation Coalition is a national group of healthcare stakeholders working through a new initiative called Project Innovation to accelerate innovation in cancer care. Primary funding for this initiative comes from NPAF with additional support through educational grants from Celgene Corporation, Eli Lilly, Novartis and Pfizer.

Members of the Cancer Innovation Coalition are: Amgen, American Association for Cancer Research, American Cancer Society Cancer Action Network, Association of Community Cancer Centers, Bladder Cancer Advocacy Network, Bristol-Myers Squibb, Cancer Support Community, Celgene Corporation, Colon Cancer Alliance, Community Oncology Alliance, Council for Affordable Health Care, CureSearch, Cutaneous Lymphoma Foundation, Fight Colorectal Cancer, Friends of Cancer Research, Eli Lilly & Company, Genentech, GlaxoSmithKline, National Patient Advocate Foundation, Novartis, Oncology Nursing Society, Personalized Medicine Coalition, Pfizer, Prevent Cancer Foundation, and US Oncology Network.

More information about Project Innovation is available at www.projectinnovation.org, @projectinno on Twitter and https://facebook.com/ProjectInno on Facebook.

About the National Patient Advocate Foundation
Based in Washington, DC, the National Patient Advocate Foundation (NPAF) is a national non-profit organization providing the patient voice in improving access to, and reimbursement for, high-quality healthcare through regulatory and legislative reform at the state and federal levels. The advocacy activities of NPAF are informed and influenced by the experience of patients who receive direct, sustained case management services from NPAF's companion organization, Patient Advocate Foundation (PAF).

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