



Sector Research Report

Oncology

The cure for cancer eludes, but extraordinary progress has been made in minimizing the toxicity of treatments through more focused chemo and radiation therapies. Additionally, the development of vaccines and immunotherapy to engage the body's own immune system is an area of great opportunity. This session will examine the areas of greatest opportunity for investors in the treatment of cancer.

OneMedResearch reports on the **Emerging Trends in Oncology** will look at the major areas in this sector and insights as to how best to identify the most promising investment opportunities.

- **Part I: HSP90 Inhibitors** (July 12th, 2012)
- Part II: Brachytherapy
- Part III: Immunotherapy
- Part IV: Oncolytic viral vectors
- Part V: Targeting the cancer network
- Part VI: Targeting the cancer stem cells

Oncology Editorial Team:

Matthew Margolis, Managing Editor, OneMedPlace
Romulo Hurtado PhD Science Editor OneMedResearch
Joon Lee, PhD., Analyst, OneMedResearch
Fumiko Shimizu, Analyst, OneMedResearch
Brett R. Johnson, CEO, OneMedPlace



About OneMedResearch:

OneMedResearch delivers information on investment opportunities to serious investors in healthcare and life sciences. The team produces monthly research reports exploring the emerging growth companies developing disruptive technology in life sciences. In addition, OneMedResearch produces investor guides and directories to various life sciences sectors, updated quarterly.

Investor Guides aggregate critical information, contacts and resources in one place, thereby delivering a time-saving, risk-reducing tool for anyone with a significant investment in the sector.

- A near comprehensive list of companies and short descriptions of both public and private companies, to include contact information important to deal-makers.
- Interviews with thought leaders, company executives, and investors
- Directory of resources including major investors, associations, research institutions, conferences.
- Market analysis from leading industry researchers and publications, including developments, technology advances, economics and political impact

Accompanying this printed, abridged version of the Investor Guide is an electronic version, which provides hyperlinks to interviews, news stories, and database profiles scattered throughout the guide.

For the electronic Investor Guide to Oncology, visit www.onemedplace.com/investor-guide-oncology.pdf

Annual Subscriptions: Investors can also subscribe to the full investor guide, updated quarterly. The full electronic investor guide subscription will include:

- Quarterly updates of interviews and market analysis
- Expanded companies profiles with executive contact information
- Directory of investors and additional resources

To learn more about the full Investor Guide subscription, visit www.onemedresearch.com.

Emerging Trends in Oncology

The following is a discussion of disruptive technology in the field of tumor therapy. The HSP90 inhibitor approach is gaining increasing importance in the scientific community as a cancer target, primarily because of its potential for combinatorial targeting of multiple oncogenic protein pathways and biological effects. Further, a handful of first-in-class drugs have demonstrated good tolerability, which has prompted big pharma to explore this field.

HSP90 Inhibitors – The Race towards First-in-Class for a Promising Therapy

The traditional chemotherapy and the emergence of targeted therapy

The traditional chemotherapy agents act by killing cells that divide rapidly, one of the main properties of most cancer cells. The issue, however, is that some normal cells also divide under physiological conditions, such as cells in the bone marrow, digestive tract, and hair follicles. The chemotherapy drugs are usually unable to distinguish between normal and cancerous cells, and are therefore associated with significant side effects.

Further research into cancer therapeutics led to a newer class of anticancer drugs, the targeted therapy, which blocks cancer growth by interfering with specific proteins with abnormal activity in cancer cells. This new concept was attractive to many because it seemed more logical and less harmful to normal cells. A number of small molecules and monoclonal antibodies (which most targeted therapies consist of) have been approved and subsequently used successfully in some cancers such as leukemia and breast cancer.

In many other cancers, however, the outcomes did not meet expected results or goals. Among others, one significant mechanism of failure is the development of drug resistance. This could be due to the heterogeneity of the tumor cells (some are intrinsically resistant to the drug), or by acquired mechanisms, where cancer cells “evolve” the ability to operate without the protein that is targeted by the drug (this phenomenon is termed “oncogene-switching”). Lack of knowledge on the oncogenic drivers in these resistant tumors would preclude efficient treatment, once the targeted therapy fails.

HSP90 inhibitor and network inhibition

Heat shock protein 90 (HSP90) is a molecular chaperon that interacts with multiple proteins (> 200 proteins) called “client” proteins. In the absence of HSP90, these client proteins undergo degradation by the cell’s own machinery called the proteasome. Many key oncogenic proteins have been identified as HSP90 client proteins, and so, HSP90 inhibition has the capacity to shut off multiple oncogenic pathways simultaneously. This is a concept called network inhibition, which is a promising new category of cancer therapy, where the risk of the cancer cells developing resistance to the drug could potentially be minimized.

Researchers have discovered another unique and important quality of HSP90 inhibitor, which is its ability to kill cancer cells while sparing the normal cells. This was initially a mystery, since HSP90 is expressed in both malignant and normal cells. Further investigation on the detailed mechanism of action revealed that this was due to the unique conformation of HSP90 in the cancer cells, which exists in a “super chaperon” protein complex, as opposed to a “free-floating” form found in normal cells. The HSP90 inhibitor happens to bind to HSP90 100 times better when it exists as a complex form compared to the free-floating form, giving the drug a high affinity to cancer cells.

Clinical Development and the competitive landscape

Although none of the HSP90 inhibitors have been approved yet, there are approximately 13 drugs currently in clinical evaluation (Table). Updates on these trials can be found in this web site (<http://www.hsp90central.com/>). These drugs constitute a diverse array of structure, but can in general be classified according to their similarity geldanamycin (GM), radicicol (RD), or to the purine-scaffold drugs (PU). As is often the case in drug discovery, the earliest inhibitors of HSP90 were the natural products, related to GM and RD. The prototypic HSP90 inhibitor, 17-AAG, a derivative of GM, was the first to enter clinical trials a decade ago, and evidence of clinical activity has been reported in melanoma, multiple myeloma, prostate, and breast cancer.

Limited success of 17-AAG in the initial clinical studies was attributed to chemical issues such as the insolubility to water and liver toxicity due to its quinone ring moiety. Infinity Pharmaceuticals developed IPI-504 (retaspimycin), a new GM analog, which is soluble in water and improved pharmacokinetic and toxicity profiles. IPI-504 was the most promising inhibitor of this class (and its last remaining).

The RD class has improved solubility, and has followed 17-AAG into the clinic. The RD class inhibitors, however, also contain chemically reactive features, which could modulate their activities in the body and also contribute to ocular toxicity seen with this class of agents. Despite their advancement through the clinical evaluation, chemical features of GM and RD remain as a possible liability for these classes of drugs.

PU3 was the first small molecule developed by a rational design, after the X-ray crystal structure of HSP90 became available, by Dr. Gabriela Chiosis at Memorial-Sloan Kettering Cancer Center. PU3 was optimized by a number of companies and resulted in the generation of potent and selective drugs, which has advanced to clinical trials. CNF 2024/BIIB021 was the first “fully synthetic” HSP90 inhibitor to enter the clinic, and was developed by Conformia Therapeutics, which was later acquired by Biogen Idec. BIIB021 was well tolerated in the patients, and studies in chronic lymphocytic leukemia and breast cancer was completed. Based on these data, phase 2 studies with this drug in breast cancer and gastrointestinal stroma tumor

(GIST) were planned (and recently completed), however, Biogen Idec announced that they are no longer developing this drug and are exiting the oncology space for strategic purposes in 2010.

Meanwhile, in the Chiosis lab, further efforts focused at improving the potency of PU3, have led to the synthesis of PU-H71, the most potent Hsp90 inhibitor of the PU class published to date, and also as the compound of this class with highest selectivity for tumor vs normal cell Hsp90 (700 to 3000-fold). This drug has been rigorously tested in preclinical models for breast cancer, lung cancer, and leukemia with promising results. Interestingly, through collaborations with Weill Cornell Medical College and the National Cancer Institute, the Chiosis lab has reported that PU-H71 can be engineered into a tool to “fish-out” entire networks of abnormal proteins in tumor cells, revealing altered pathways contributing to malignancy. This technology can also be utilized to “predict” the response of different tumors to this drug. In 2011, PU-H71 was licensed to Samus Therapeutics, and entered clinical evaluation in solid tumors and lymphoma.

Meanwhile, in the Chiosis lab, further efforts focused at improving the potency of this agent, have led to the synthesis of PU-H71, the most potent Hsp90 inhibitor of the purine-scaffold series published to date, and also as the compound of this class with highest selectivity for tumor vs normal cell Hsp90 (700 to 3000-fold). PU-H71 was licensed to Samus Therapeutics, and entered clinical evaluation in 2011. Much less is known about the efficacy of PU class inhibitors at present compared to some drugs in other classes, but a fierce competition towards approval as first-in-class HSP90 inhibitor should continue without a doubt.

Class	Inhibitor	Company	First-in-human	Clinical trials*	Phase
GM	Retaspimycin (IPI-504)	Infinity Pharma, \$INFI	2004	20	1,2,3
RD	KW-2478	Kyowa Hakko Kirin, Japan	2007	2	1,2
	Ganetespib (STA-9090)	Synta Pharma, \$SNTA	2008	13	1,2,3
	AUY922	Novartis, \$NVS	2009	20	1,2
	HSP990	Novartis, \$NVS	2009	2	1
	AT13387	Astex Pharma, \$ASTX	2009	3	1,2
PU	BIIB021**	Biogen Idec, \$BIIB	2006	7	1,2
	BIIB028**	Biogen Idec, \$BIIB	2008	1	1
	MPC-3100	Myrexix, \$MYRX	2009	1	1
	Debio 0932	Debiopharm (private)	2010	1	1
	PU-H71	Samus Therapeutics (private)	2011	2	1
Others***	SNX-5422	Esanex (private)	2007	5	1
	DS-2248	Daiichi Sankyo Inc.	2011	1	1

*Clinical trials in the US (<http://clinicaltrials.gov>)

**BIIB announces they are exiting oncology R & D, seek to spin out or out-license these assets

***Includes undisclosed

Future issues in subsequent Investor Guide Editions:

- Emerging Trends in Oncology Part II: Brachytherapy
- Emerging Trends in Oncology Part III: Immunotherapy
- Emerging Trends in Oncology Part IV: Oncolytic viral vectors
- Emerging Trends in Oncology Part V: Targeting the cancer network
- Emerging Trends in Oncology Part VI: Targeting the cancer stem cells

To subscribe to the full investor guide, visit [OneMedPlace](http://OneMedPlace.com).



Advaxis
Princeton, NJ.
Clinical Stage
Cancer Immunotherapy

Thomas Moore, CEO

Advaxis is a biotechnology company developing the next generation of immunotherapies for cancer and infectious diseases. The company's platform technology utilizes a modified infectious microorganism, live attenuated *Listeria monocytogenes* (Lm), which is bio-engineered to secrete an antigen/adjuvant fusion (Lm-LLO) protein and thereby activate numerous aspects of the immune system simultaneously. Lm-LLO-based immunotherapy is able to generate a comprehensive immune response by serving as its own adjuvant, directing antigen presentation, and changing the tumor microenvironment by increasing tumor infiltrating killer T-cells and decreasing Tregs/MDCs. Effects include innate immunity, enactment of both arms of the adaptive immune response, and many non-classical immune responses. This later-stage biotechnology company has over fifteen distinct constructs in various stages of development. The company is in Phase II with its lead candidate for CIN, and in May 2012 announced completed enrollment in a Phase II Cervical Cancer study.

[OTC BB: ADXS 28M]

[The Technology Corner:](#)
Disruptive Technologies in Prostate Cancer



ADVENTRX Pharmaceuticals
San Diego, CA.
Clinical Stage
Cancer Pharmaceuticals

Brian Culley, CEO

ADVENTRX Pharmaceuticals Inc. acquires, develops, and commercializes proprietary product candidates. The company is currently developing three late-stage product candidates, two of which are novel emulsion formulations of pharmaceutical products that are currently marketed. Exelbine™, is a novel emulsion formulation of chemotherapy drug Navelbine®, and ANX-514 is a detergent-free emulsion formulation of chemotherapy drug Taxotere®. The current formulations of these drugs entail limitations such as phlebitis, erythema, hypersensitivity reactions, and fluid retention. ADVENTRX is developing ways to improve their safety profiles without adversely affecting efficacy. ADVENTRX has also received FDA Orphan Drug Designation for its ANX-188, initially being developed as a first-in-class treatment for pediatric patients with sickle cell disease who are in acute crisis.

[NYSE: ANX 23M]



OncoSec Medical
San Diego, CA.
Clinical Stage
Targeted Tumor Therapies

Punit Dhillon, CEO

OncoSec Medical is developing localized therapies against solid tumors to overcome side effects associated with non-targeted approaches. OncoSec's solid tumor therapies consist of an agent capable of selectively killing cancerous cells, coupled with a delivery system. The OncoSec Medical System (OMS) utilizes electroporation, which entails applying a brief electric field to a living cell in order to generate a transient increase in permeability in the cell's outer membrane; this allows an agent previously injected into the area to flow into targeted cells by an increased factor of 1000 or more, while minimizing any impact on normal tissues. OMS ElectroChemotherapy has been demonstrated through data from Phases 1 through 4 to be safe and highly effective in eradicating solid tumors, including head and neck cancer, melanoma, basal cell carcinoma, squamous cell carcinoma, and liver and pancreatic cancers. OncoSec is also developing its platform to deliver pro-inflammatory cytokine proteins into the body.

[OTC BB: ONCS 13M]

Read the [OneMedResearch](#) Initiation Report on OncoSec Medical



SpectraScience
San Diego, CA.
Marketization Stage
Cancer Diagnostics

Michael Oliver, CEO

SpectraScience has developed patented platform technology to diagnose colorectal cancer early while recovery rates are high. The WavSTAT™ Optical Biopsy System instantly determines whether tissue is normal, precancerous, or cancerous without the need for a biopsy. The physician uses laser-induced fluorescence and an optical fiber to transmit laser light via the flexible endoscope to the tissue; the auto-fluorescence from the tissue is then collected and returned to an optical detector for analysis. The WavSTAT™ mobile console consists of a low-power laser, a sophisticated light detector, an internal computer, and analysis software. SpectraScience also markets the WavSTAT™ Optical Biopsy Forceps, which includes a light-transmitting optical fiber running throughout and biopsy jaws at the examination end in case diseased tissue is found. SpectraScience is also exploring devices to target esophageal, bladder, and lung cancer.

[OTC: SCIE]



Zymeworks
Vancouver, Canada.
Pre-Clinical Stage
Protein Therapeutics

Ali Tehrani, CEO

Zymeworks Inc. is a biotechnology company committed to developing best-in-class protein therapeutics for the treatment of cancer, autoimmune and inflammatory diseases. Zymeworks' approach combines proprietary molecular modeling and simulation software with high-performance computing to create an environment for in silico experimentation and predictive protein optimization. Using this approach Zymeworks has developed multiple platform technologies to advance the field of biologics drug discovery and optimization. The company's lead platform is Azymetric™, an IgG1-based heterodimeric antibody scaffold allowing bi-specific binding to two antigens or drug targets. Bi-specific antibody therapeutics potentially allow drug-makers to combine two existing drugs used as a cocktail into one potent therapeutic. In 2011, the company signed a partnering agreement with Merck to develop Azymetric, now in in vivo stage for multiple indications.

[Private]

Listen to the [OneMedRadio](#) interview with Dr. Ali Tehrani

Oncology Company Directory

The following is a list and brief description of companies around the globe operating in oncology. Public companies will include ticker symbol and market cap (in USD unless otherwise noted).

3SBio | [SSRX] 288M | Protein-based products designed to address large markets in nephrology, oncology, supportive cancer care
4SC | [FSCGF] OTC | Accelerates the development of drug candidates with its proprietary virtual screening technology
4SCan Access Pharmaceuticals | [ACCP] 14M | Specializes in cancer and supportive care products based in nanopolymer technologies
ActivX Biosciences, Inc. | Private | Small molecule drugs for hematology, Oncology, metabolic and inflammatory diseases
Aduro Biotech | Private | Engineering Listeria to treat cancer and infectious diseases
Advanced Cancer Therapeutics | Private | Exclusive licenses to new anti-cancer therapeutics and a pharmaceutical vaccine
Advaxis Incorporated | [ADXS] 28M | A biotechnology company developing the next generation of immunotherapies
ADVENTRX Pharmaceuticals | [ANX] 24M | Drug reformulations for the treatment of cancer and hematology diseases
Aegera Therapeutics | Private | Apoptosis-based therapies for treatment of solid tumors and hematological malignancies
Aeterna Zentaris, Inc. | [AEZS] 56M | Hold a comprehensive portfolio of biopharmaceuticals for applications in oncology
Agennix | [GAGXF] 123M | Protein-based drugs for cancer and diabetic ulcers
Agenus | [AGEN] 122M | Commercializing breakthrough immunotherapies for cancer and infectious diseases
Agios | Private | Focused on cancer metabolism, a new approach to the treatment of cancer patients
Alchemia Limited | [AEMAF] 129M | Particular expertise in chemistry
Arakis Ltd | Private | New clinical uses for known drugs, termed Performance Enhanced Medicines
Archer Biosciences | Private | Development of a novel class of taxoids, designed to treat therapy-resistant tumors
Archimedes Pharma | Private | Marketing niche pharmaceutical products to the UK market
ArQule | [ARQL] 391M | Develop and commercialize a next-generation of small molecule cancer therapeutics
Ascalon International | Private | Diversified portfolio of promising oncology drugs, including an intravenous therapeutic
Bavarian Nordic | [BVNKF] 220M | Vaccines and immunotherapy against infectious diseases and cancers
Baxter Oncology | Private | Pharmaceuticals, delivery systems, and services for the treatment of cancer
Berlex | Private | Products for female healthcare, Oncology, diagnostics and dermatology
Berlin-Chemie AG | Private | Pharmaceutical products for cardiovascular and oncological fields
Bioniche Life Sciences | [BNHLF] 47M | Urocidin™, a Mycobacterial Cell Wall-DNA Complex, for treating bladder cancer
BioNumerik Pharmaceuticals, Inc. | Private | Drugs for cancer patients with the aim of reducing toxicities
BioPartners | Private | Recombinant biopharmaceutical products for the treatment of a wide range of pathologies
Biovest International | [BVTI] 58M | Clinical trials on BiovaxID, an immunotherapy vaccine for Non-Hodgkin's Lymphoma
Biovista, Inc. | Private | Repurposing drugs for unmet clinical needs including glioblastoma and melanoma
British Technology Group | Private | develops, and commercializes emerging technologies focusing on oncology
Callisto Pharmaceuticals | [CLSP] 70M | Drugs to treat leukemia, multiple myeloma, and osteolytic bone disease
Cambridge Laboratories | Private | Specialty pharmaceuticals for Oncology, urology and neurology
Celsion | [CLSN] 131M | Heat-activated treatments for benign prostatic hyperplasia
CerRx | Private | Unique cancer therapeutics that target the ceramide pathway
Cerulean Pharmaceuticals | Private | A clinical-stage biopharmaceutical company specializing in nanopharmaceuticals
CivaTech Oncology | Private | Developing a device treating prostate cancer with low-dose-rate brachytherapy
Colby Pharmaceuticals | Private | Drugs for androgen-dependent and androgen-independent tumors
Cynvec | Private | Develop Sindbis-based viral vectors as oncolytic therapeutics
Cytokinetics | [CYTK] 50M | Develops therapeutics to target multiple indications based on their expertise on the cytoskeleton
DARA BioSciences, Inc. | [DARA] 7M | Acquires promising small molecules, develops them through proof of concept in humans
DelMar Pharmaceuticals | Private | Develops anti-cancer therapies in new, high-impact orphan cancer indications
Dragon Pharmaceuticals Inc. | private | Developed a DNA vector tech platform to construct therapeutic protein cell lines
Egenix | Private | Based on the development of small molecule drugs that block mRNA translation
Eleison Pharmaceuticals | Private | Acquiring and developing clinical stage drug candidates for orphan indications
EpiCept Corporation | [EPCT] OTC | Pharmaceutical products for the treatment of AML, glioblastoma, solid tumors, and pain
Esperance Pharmaceuticals | Private | Targeting specific receptors on the cancer cells without harming normal cells
Evestra | Private | Focusing on female reproductive health and hormonally regulated cancers, such as breast cancer
Exelixis | [EXEL] 879M | Engaged in the discovery of novel protein and metabolic networks to identify novel anti-cancer drugs
Eximias Pharmaceutical Corporation | Private | Acquisition and development of products for the treatment of cancer
Faustus Forschungs Compagnie | Private | Developing drug candidates with institutions in the field of medical oncology
FivePrime Therapeutics | Private | Systematically screening all relevant proteins in the human to discover therapeutics
Galena Biopharma | [GALE] 104M | Develops immunotherapies that eliminate tumor cells without harming healthy tissue
Generex Biotechnology | [GNBT] OTC | Delivery of large-molecule drugs with an oral spray platform
Genesis Biopharma, Inc. | [GNBP] 26M | VG102, whose parent antibody has been used as a cancer radioimaging agent
Genesis Pharma | Private | Products for neurology, genetic disorders, haematology, nephrology, oncology and rheumatology
Genetic Immunity | Private | Develops and commercialized a new class of immunotherapeutic biologics
GlobelImmune | Private | Developing vaccines to treat human diseases such as HIV and cancer
GlycoGenesys, Inc. | [GLGSQ] OTC | New drug candidates based on glycobiology including cancer treatments
Halozyme Therapeutics | [HALO] 902M | Recombinant human enzymes for tor infertility, ophthalmology, and oncology
Haptogen | private | Focused on the development of haptens to generate novel and effective therapeutics in oncology

IceCure Medical | [ICCM.TA] | Cryoablation-Based Treatment of Benign Tumors in Women

Idera Pharmaceuticals, Inc. | [IDRA] 33M | Therapeutics that modulate immune responses for the treatment of multiple diseases

Immune Pharmaceuticals | Private | Monoclonal Antibodies for the treatment of Inflammatory Diseases and Cancer

ImmunoCellular Therapeutics | [IMUC] 143M | Cellular-based products to treat cancers and neurodegenerative disorders

Infinity Pharmaceuticals | [INFI] 409M | Discover, develop, and deliver best-in-class medicines for the treatment of cancer

IsoRay Medical | [ISR] 28M | Provides innovative solutions for the treatment and diagnosis of cancer using medical isotopes

Jennerex BioTherapeutics | Private | Development and commercialization of targeted oncolytic products for cancer

Jerini | Private | Focuses on the discovery and development of novel peptide-based drugs

KaloBios Pharmaceuticals | Private | Human antibody therapeutics for infectious diseases, autoimmune disorders, and cancer

Keryx Biopharmaceuticals | [KERX] 140M | Acquisition and development of medically important pharmaceutical products

Ligand Pharmaceuticals | [LGND] 341M | Discovers and develops small molecule drugs to address unmet medical needs

Light Sciences Oncology | Private | Developing Light Infusion Therapy, a light-activated drug treatment for solid tumors

MacroGenics | Private | Developing immune-based products including monoclonal antibodies to treat patients with cancer

MannKind | [MNKD] 427M | Focused on therapeutic products for diabetes, cancer, inflammatory, and autoimmune diseases

Marina Biotech, Inc. | [MRNA] OTC | RNAi-based therapies to target a wide range of human diseases

Marshall Edwards | [MEIP] 10M | Drugs for Multiple Signal Transduction Regulators reaching at the heart of cancer process

MDRNA | [MRNA] OTC | Development and commercialization of therapeutic products based on RNA interference

Merrimack Pharmaceuticals Inc. | [MACK] 677M | Innovative cancer therapies paired with companion diagnostics

MGI Pharma | Private | Acquires Oncology-focused pharmaceutical products

Myrex Inc | [MYRX] 70M | Biotechnology company focused on developing and commercializing novel therapies for cancer

Nascent Pharmaceuticals | Private | Oral nucleoside prodrug anti-cancer therapeutics; pharmaceutical candidates for women's health

NEMOD Biotherapeutics | Private | Development of cancer vaccines and research tools based on human dendritic cell line

Neogenix Oncology | Private | A clinical stage biotechnology company focused on developing cancer vaccines

NeoRx Corporation | [PARD] OTC | Radiation technology to treat cancers

Newlink Genetics Corporation | [NLNK] 336M | Developing HyperAcute vaccines and small molecule based drugs

NexMed | [APRI] 93M | Leveraging its proprietary transdermal drug delivery technology to develop innovative products

Nordion Inc | [NDZ] 581M | Medical isotopes and radiotherapeutics

Northwest Biotherapeutics | [NWBO] 37M | Developing immunotherapy products to treat cancer

Novacea | [TSPT] 120M | Drug development and commercialization in oncology and hematology

Novocure | private | Offers TTF therapy, an anti-mitotic treatment that attempts to slow or reverse cancer tumor progression.

OncoSec Medical | [ONCS] 13M | Therapeutic agent coupled with an electroporation-based delivery system to kill cancerous cells

Oncotherix | Private | Oncology company developing intracellular radiotherapy for treating cancers

Oncothyreon | [ONTY] 271M | Pipeline includes both synthetic vaccines and small molecules for a variety of cancer indications

OncoVista | [OVIT] OTC | A high-growth theragnostic company that uses specific biomarkers to detect metastatic tumors

Orphan Pharma international | Private | Monoclonal antibody medications for treating rare disorders

Panacea Pharmaceuticals | Private | Focuses on proteins and biochemical pathways in oncology and neurodegenerative disease

Pathway Therapeutics | Private | Developing the best in class selective inhibitors of PI3-kinase and mTOR for cancer treatment

Pepscan Therapeutics | Private | Innovative peptide-based products and proprietary immunotherapeutics

Peregrine Pharmaceuticals | [PPHM] 77M | Developing novel monoclonal antibody drugs for cancer and serious viral infections

Pharminox | Private | Small molecule oncology research and development

Pharmion Corporation | Private | Portfolio of approved and pipeline products targeting the hematology and oncology markets

Photo Dynamic Therapy | Private | Intelligent modulated laser light that kills tumor cells by generating oxygen radicals

Pierre Fabre Medicament | Private | Discovery and early development of compounds of natural, chemical or biological origin

Plexikon | Private | Developing novel small molecule pharmaceuticals to treat human disease

Progenics Pharmaceuticals | [PGNX] 346M | Innovative therapeutics in gastroenterology, oncology and virology

ProNAi Therapeutics | Private | Nucleic acid-based interfering technology to develop therapies for patients with cancer

ProtAffin Biotechnologie AG | Private | Developing a novel class of biopharmaceuticals based on glycan-binding decoy proteins

ProtoKinetix | [PKTX] OTC | Monoclonal antibodies termed "Super-antibodies" to create cancer therapeutic antibodies

Provectus Pharmaceuticals | [PVCT] OTC | Its oncology focus is on melanoma, breast cancer and metastatic cancers of the liver

Psimei Pharmaceuticals | Private | Boron Cellular Radiotherapy (BCR) products

Resverlogix | [RVXCF] 133M | The TGF-beta Shield™ Program utilizes an immunomodulating therapy to target cancers

Select Therapeutics | [PKTX] OTC | Cytotoxic and immunotherapeutic agents for the treatment of cancers and infectious diseases

Sirna Therapeutics | Private | Producer of nucleic acid technology-based therapeutics that target human diseases

Soligenix, Inc | [SNGX] OTC | Products to treat side effects of cancer treatments and serious gastrointestinal diseases

SpectraScience | [SCIE] OTC | Minimally invasive non-biopsy cancer screening

Spectrum Pharmaceuticals | [SPPI] 972M | In-licensing of oncology drug candidates and strategic alliances for these candidates

Stemline Therapeutics, Inc. | Private | Developing oncology therapeutics that target cancer stem cells as well as the tumor bulk

SynDevRx | Private | Develops novel drug conjugates to non-degradable polymer backbones

Tapestry Pharmaceutical | [TPPHQ] PINK | Receptor-mediated drug targeting directed at specific cancer cells

Tapimmune Inc. | [TPIV] OTC | Therapeutics and vaccines in the areas of oncology and infectious disease

Telik, Inc. | [TELK] 3M | Uses Target-Related Affinity Profiling technology to discover small molecule drugs to treat cancer

Therion Biologics Corporation | Private | Therapeutic vaccines to extend and improve the lives of cancer patients

Threshold Pharmaceuticals | [THLD] 432M | Small molecule therapeutics to treat cancer

Tigris Pharmaceuticals | Private | Targeting key pathways in cancer growth such as p53/apoptosis, angiogenesis, Rho GTPases

Transgene, S.A. | [TNG.PA] 239M | Developing gene therapy, therapeutic vaccines, and delivery technologies for cancer treatment

Twinstrand Therapeutics | Private | Targeted prodrugs for cancer and viral disease
Unibioscreen | Private | Works with pharma and biotech companies to identify active compounds in the cancer field
Vantage Oncology | Private | Offers a comprehensive development, implementation and management for radiation oncology
Vical Incorporated | [VICL] 309M | Researches and develops biopharmaceuticals based on patented DNA delivery technologies
Xanthus Life Sciences, Inc. | Private | Small molecules advancing in clinical development for multiple cancer indications
Xcovery | Private | Next generation, targeted, small molecule inflammation and oncology therapeutics
Xcyte Therapies | [CYCCP] 148M | Develops cell-based therapeutic products for cancer and infectious disease
Xenova Group plc | Private | A biotechnology company developing novel drugs to treat cancer and addiction
Ziopharm Oncology | [ZIOP] 478M | Small molecule cancer drugs
Zymeworks | Private | Developing highly potent bi-specific antibodies and scaffold technology

Notes:



DelMar Pharmaceuticals
Vancouver, Canada.

Jeffrey Bacha, CEO
*****@delmarpharma.com

Del Mar Pharmaceuticals develops and commercializes proven anti-cancer therapies in new, high-impact orphan cancer indications in which patients have failed modern biologic therapy. VAL-083 is the Company's lead drug candidate, and has been indicated by over 40 pre-clinical and clinical studies to be active against a wide range of tumor types, including glioblastoma multiforme (GBM). According to published data, approximately half of patients diagnosed with GBM will fail both front-line therapy with Temodar™ and second-line therapy with Avastin™; there are currently no approved treatments for such patients. VAL-083 benefits from a historical investment of over \$50M by the National Cancer Institute, and is currently undergoing clinical trials for GBM patients. The drug is already approved as a cancer chemotherapeutic in China for the treatment of chronic myelogenous leukemia and solid tumors.

(604) 629-5989

Listen to the [OneMedRadio](#) interview with CEO Jeffrey Bacha



Immune Pharmaceuticals
New York, NY.

Daniel Teper, CEO
*****@immunepharmaceuticals.com

Suzy Jones
*****@immunepharmaceuticals.com (646) 588-5400

IMMUNE Pharmaceuticals is an Israeli-based emerging leader in the development of Monoclonal Antibodies for the treatment of Inflammatory Diseases and Cancer. IMMUNE is in-licensing clinical stage first in class monoclonal antibodies. The company's lead program, Bertilimumab, is ready for phase II in Inflammatory Bowel Disease (Crohn's Disease, Ulcerative Colitis) and Severe Asthma. Bertilimumab is also in Phase II development for various indications related to ophthalmology and bullous pephigoid. The lead technology in the cancer platform is NanomAbs, conjugates of Monoclonal Antibodies and drug-loaded Nanoparticles, currently entering clinical phase. Monoclonal Antibodies are one of the most attractive pharmaceutical markets with annual sales of over \$ 50 billion, continued double digit growth, 5 out of the top 10 pharmaceuticals, high market valuation and rich partnerships, including for earlier development stage drugs.

[OneMedForumNY 2012](#) presenting company



ImmunoCellular Therapeutics
Woodland Hills, CA.

Manish Singh, CEO
*****@imuc.com

David Fractor, CFO
*****@imuc.com

IMUC is a Los Angeles-based clinical-stage company that is developing immune-based therapies for the treatment of brain and other cancers. IMUC has two active immunotherapy product platforms: a cancer stem cell vaccine and a dendritic cell-based vaccine-both of which may be applicable to multiple types of cancer. ICT-107 is an autologous dendritic cell-based vaccine, currently in Phase 2 for glioblastoma. ICT-121 is a universal CSC vaccine, currently in preclinical development for recurrent glioblastoma, that stimulates an immune response to CD-133, a protein that is overexpressed by many CSCs. In addition, the company is in preclinical development with ICT-140 for ovarian cancer. The company's monoclonal antibody platform is in clinical development for pancreatic and SCLC and multiple cancers. IMUC is partnered with Roche in the development of ICT-169 monoclonal antibody for the treatment of ovarian cancer and multiple myeloma.

(818) 992-2907



IsoRay
Richland, WA.

Dwight Babcock, CEO
*****@isoray.com

William Cavanagh, VP
Research and Development
*****@isoray.com

IsoRay Medical™ provides innovative solutions for the treatment and diagnosis of disease using medical isotopes. Cesium-131, a seed brachytherapy radioisotope cleared by the FDA, is the company's powerful new treatment for prostate cancer; brachytherapy is a one-time, minimally invasive procedure that involves the placement of tiny seeds containing a radioactive isotope inside the prostate to kill malignant cells. Compared to other prostate brachytherapy isotopes on the market, Cesium-131 has a higher average energy, which enhances uniformity in radiation, and also has the shortest half-life, which limits side effects and increases the drug's biological effective dose. This later-stage biotechnology company's brachytherapy isotope received FDA approval in 2003, and the company expects to broaden its treatment options with the development of protocols for the treatments of breast, liver, lung, pancreatic, and other cancers and malignancies.

(509) 375-1202

[OneMedSentinel](#): The power of CS-131 and brachytherapy



Northwest Biotherapeutics
Bethesda, MD.

Linda Powers, CEO
*****@nwbio.com

Les Goldman, Senior VP
Business Development
*****@nwbio.com

Northwest Biotherapeutics Inc. is developing immunotherapy products that generate and enhance immune system responses to treat cancer. Northwest Biotherapeutics' platform technology, DCVax®, involves extracting a patient's dendritic cells from the body, loading them with tumor biomarkers or "antigens" in order to create a personalized therapeutic vaccine, and injecting these cells back into the patient to initiate a potent immune response against cancer cells. The company's lead product candidate, DCVax®-L, is in Phase II trials for targeting Glioblastoma Multiforme, the most lethal form of brain cancer. DCVax®-Prostate, which targets late-stage prostate cancer, has received FDA clearance to commence a Phase III clinical trial. This earlier-stage biotechnology company is also developing ProstaView™, an experimental monoclonal antibody-based technology that enables the in vivo diagnostic imaging of metastatic prostate cancer, as well as CXCR4, an experimental monoclonal antibody therapy that targets a functional chemokine receptor highly expressed in several cancer types.

(240) 497-9024

[OneMedSentinel](#): Why Northwest Bio is one of the four cancer companies to watch this quarter

Resource Directory

The following is a list of resources around the globe active in oncology. In this list we have identified: foundations and associations; research institutions; clinical research organizations; events; and publications. On this page is a sample of an expanded resource profile.

Foundations/Associations

American Association for Cancer Research
American Cancer Society
American College of Radiology
American Society for Therapeutic Radiology and Oncology
American Society of Clinical Oncology
Association of Cancer Executives
Bonnie J Addario Lung Cancer Foundation
Children's Oncology Services, Inc
Conquer Cancer Foundation of ASCO
Curesearch-National Childhood Cancer Foundation
International Association for the Study of Lung Cancer
Kidney Cancer Association

Lung Cancer Foundation of America
Michael J Fox Foundation
National Breast Cancer Foundation
National Comprehensive Cancer Network
National Foundation for Cancer Research
Prevent Cancer Foundation
Seattle Cancer Care Alliance
SGO
Society of Neuro-Oncology
Starr Cancer Consortium
Susan G Komen for the Cure

Research institutions

Biomedical Research Alliance of New York
Blokhin Russian Cancer Research Centre
Cancer Research UK Cambridge Research Institute
Capital Health (Canada)
Charité Comprehensive Cancer Center (Germany)
CMX Research (Canada)
Cold Spring Harbor
Comprehensive Cancer Center Vienna
Dana-Farber Cancer Institute
Danish Cancer Society Research Center
Erasmus MC Daniel den Hoed Cancer Center (Netherlands)
Fred Hutchinson Cancer Research Center
Fundacion Instituto Valenciano de Oncologia (IVO) (Spain)
Hematology – Oncology of Indiana
Herbert Irving Comprehensive Cancer Center
IEO European Institute of Oncology (Italy)
Institut Catalan d'Oncologia (Spain)
Institut Curie (France)
Instituto Madrileño de Oncología, FundacionGrupo (Spain)
IOV Istituto Oncologico Veneto (Italy)
Istituto di Oncologia Molecolare (Italy)
Istituto Superiore di Oncologia ISO (Italy)

John Wayne Cancer Institute
Kazan Cancer Centre
King's Heath Partners Integrated Cancer Centre
Massachusetts General Hospital Cancer Center
Mayo Clinic Cancer Center
MD Anderson Cancer Center
Memorial Sloan-Kettering Cancer Center
National Cancer Institute
National Institutes of Health
NCI Center for Cancer Research
Netherlands Cancer Institute
Nisus Research
NYU Cancer Institute
Oncologic Center, UZBrussel
Oncology Institute of Southern Switzerland
OncoResearch
Research Across America
Sun Research Institute
The Cancer Institute of New Jersey
The Rosogin Institute
The Sidney Kimmel Comprehensive Cancer Center
The Urology Center of Colorado



**Association of
Cancer Executives**
Washington, D.C.
(202) 521-1886

ACE seeks to promote excellence and enhance skills in leadership in business and clinical management aspects of cancer care. ACE also provides a forum for dialogue on cancer program development. Members and coordinators disseminate emerging, innovative oncology management best practices among the national cancer care community. In addition, the group facilitates continuing education for cancer care administrators. Members receive access to newsletters, conference calls, networking opportunities, and bulletin boards.

Brian Mandrier, Executive Director
*****@cancerexecutives.org

Ellen Feigal, SVP, Research and Development
*****@cancerexecutives.org

Resource Directory (Continued)

The following is a list of resources around the globe active in oncology. In this list we have identified: foundations and associations; research institutions; clinical research organizations; events; and publications.

Clinical Research Organizations

Averion International Corp.
Aptiv Solutions – Listen to the [OneMedRadio](#) interview
Blanchard y Asociados
Arkios
PharmaPhase Management, LLC
Regulatory Affairs Associates
Clinterra Research Network
Pharmatech
Beardsworth Consulting Group
MedSource
Molecular Imaging Inc
CE3 Inc
Explora BioLabs
NextGen Sciences
B. McLaughlin Associates, Inc (BMA)
Inference Systems
Prosoft Software, Inc.
Kaizen Clinical Services, Inc.
Pharma Lynx, LLC
BLCPro
DSP Clinical Research
WILMAX Clinical Research, Inc.
Invitek, Inc.
Prologue Research

Publications

Advances in Cancer Research
Breast Cancer Research
Cancer Cell
Cancer Research
Carcinogenesis
Clinical Cancer Research
International Journal of Cancer
Journal of Clinical Oncology
Journal of the National Cancer Institute
Leukemia
Molecular Cancer Research
Molecular Cancer Therapeutics
Nature Reviews Cancer
Neoplasia
Neuro-Oncology
Oncogene

To view the electronic Investor Guide to Oncology, visit:
www.onemedplace.com/investor-guide-oncology.pdf

To learn more about the full Investor Guide subscription, which provides access to quarterly updates of interviews and directories, visit www.onemedresearch.com.