Brain Cancer Drug Pipeline Update

Despite the heavy investment made into brain cancer research, primary brain cancer, with glioblastoma multiforme being the most aggressive and most common form, remains one of the most deadly diseases in the developed world. While primary brain tumors are relatively rare, the chances of survival for patients with the disease are very low, even with the best treatment options currently available.

There are today 333 companies plus partners developing 397 drugs targeting brain cancer in development. In addition, there are 2 suspended drugs and the accumulated number of ceased drugs over the last years amount to another 96 drugs. Brain Cancer Drug Pipeline Update lists all drugs and gives you a progress analysis on each one of them. Identified drugs are linked to 225 different targets. All included targets have been cross-referenced for the presence of mutations associated with human cancer. To date 218 out of the 218 studied drug targets so far have been recorded with somatic mutations. The software application lets you narrow in on these mutations and links out to the mutational analysis for each of the drug targets for detailed information. All drugs targets are further categorized on in the software application by 55 classifications of molecular function and with pathway referrals to BioCarta, KEGG, NCI-Nature and NetPath.

Drug Pipeline Update at a Glance

Investigators
Includes more than 333 principal companies plus their collaborators. There is direct access from inside the application to web pages of all principal companies.

Note: You are able to sort and find drugs according to companies and partners from drop-down menus in the application. You may also sort and find drugs according to country of companies.

Drug name & Synonyms
Lists commercial, generic and code names for drugs.

Developmental stage
This Drug Pipeline Update contains 397 drugs in development for the treatment of brain cancer. In addition there are suspended and ceased drugs.

Pipeline Breakdown According to Number of Drugs
Marketed# 14
Registered# 1
Pre-registration# 1
Phase III# 14
Phase II# 154
Phase I# 75
Preclinical# 109
No Data# 29
Suspended# 2
Ceased# 96

Note: You are able to sort and find drugs according to developmental stage from drop-down menu in the application.

Indications
Included brain cancer drugs are also in development for 306 other indications, where of 184 are different cancer indications.

Note: You are able to find and sort drugs according to type of indication from drop-down menu in the application.

Targets
Mutations
All targets are cross-referenced with the Catalogue of Somatic Mutations in Cancer (COSMIC). It is designed
to store and display somatic mutation information and related details and contains information relating to
human cancers. To date 218 out of the 218 studied drug targets so far have been recorded with somatic
mutations and the software application lets you narrow in on these mutations and links out to the
mutational analysis for each of the drug targets for detailed information.

Biological Structures
The identity of available biological structures on 176 drug targets was retrieved from the RCSB Protein
Databank for you to easily review the 3641 structures available today among drug targets.

Identified drugs are linked to more than 225 different targets, divided into 55 classifications of molecular
function:
- Auxiliary transport protein activity
- Carboxy-lyase activity
- Carboxypeptidase activity
- Catalytic activity
- Cell adhesion molecule activity
- Chaperone activity
- Chemokine activity
- Chromatin binding
- Complement activity
- Cysteine-type peptidase activity
- Cytokine activity
- Deacetylase activity
- DNA binding
- DNA repair protein
- DNA topoisomerase activity
- DNA-directed DNA polymerase activity
- Extracellular ligand-gated ion channel activity
- Extracellular matrix structural constituent
- G-protein coupled receptor activity
- Growth factor activity
- Heat shock protein activity
- Intracellular ligand-gated ion channel activity
- Ion channel activity
- Isomerase activity
- Kinase activity
- Kinase regulator activity
- Ligand-dependent nuclear receptor activity
- Ligase activity
- Lipid kinase activity
- Lipid phosphatase activity
- Metallopeptidase activity
- Molecular function unknown
- Oxidoreductase activity
- Peptidase activity
- Protein binding
- Protein serine/threonine kinase activity
- Protein threonine/tyrosine kinase activity
- Protein-tyrosine kinase activity
- Receptor activity
- Receptor binding
- Receptor signaling complex scaffold activity
- Receptor signaling protein serine/threonine kinase activity
- Receptor signaling protein tyrosine phosphatase activity
- RNA binding
- RNA-directed DNA polymerase activity
- Structural constituent of cytoskeleton
- Sugar-phosphatase activity
- Transcription factor activity
- Transcription regulator activity
- Transferase activity
- Translation regulator activity
- Transmembrane receptor activity
- Transmembrane receptor protein tyrosine kinase activity
- Transporter activity
- Voltage-gated ion channel activity

Sub-Cellular Localization
Identified targets are categorized into 28 different primary and alternate sub-cellular localizations:
- Cell surface
- Centrosome
- Chromosome
- Clathrin-coated vesicle
- Cytoplasm
- Cytoplasmic vesicle
- Cytoskeleton
- Cytosol
- Endoplasmic reticulum
- Endosome
- Extracellular
- Golgi apparatus
- Integral to membrane
- Intermediate filament
- Kinetochore
- Membrane fraction
- Mitochondrial membrane
- Mitochondrion
- Nuclear membrane
- Nucleolus
- Nucleus
- Perinuclear region
- Perinuclear vesicle
- Peroxisome
- Plasma membrane
- Sarcoplasmic reticulum
- Secreted
- Soluble fraction

Note: You are able to find and sort drugs according to target gene name, protein name, molecular function of target, target localization, presence of mutations and availability of biological structures of target from drop-down menus in the application.

Target Expression Profile
Direct links are provided from inside the application to 330 protein expression profiles of 204 drug targets in various human tissues and cancer types, cell lines and primary cells, including up to:
- 48 different normal tissue types
- 20 different types of cancer
- 47 cell lines
- 12 samples of primary blood cells

Pathway Referals
Identified targets have been cross referenced against their involvement in different cellular pathways, according to BioCarta, KEGG, NCI-Nature and NetPath.
- BioCarta# 233 Pathways
- KEGG# 178 Pathways
- NCI-Nature# 240 Pathways
- NetPath# 32 Pathways

Note: You are able to find and sort drugs according to targeted pathways from drop-down menus in the application.

Mechanism
In total there are different drug mechanism of action represented in this Drug Pipeline Update.

Note: You are able to find and sort drugs according to mechanism of action from drop-down menu in the application.
Compound
Identified drug compounds are described by:

- Compound type
- Chemical name
- CAS Number
- Molecular weight

Note: You are able to sort and find drugs according to compound type from drop-down menu in the application.

Drug Profile
Progress analysis and review of drug development. A typical drug profile reports on, depending on stage of development and available information:

- Drug Name & Synonyms
- Presentation of drug name and synonyms

- Principal Company & Partners
- Presentation of principal company and partners

- Target and Molecular Function of Target
  Described target(s) is/are presented with:
  - Official Gene Symbol
  - Chromosome Location
  - Gene & Protein Name
  - Molecular Function

- Target Localization
  Described target(s) is/are presented with primary and alternate localizations.

- Target Expression Profiles
  Links to protein expression profile(s) of target(s) in various human tissues, cell lines and primary cells, including up to:
  - 48 different normal tissue types
  - 20 different types of cancer
  - 47 cell lines
  - 12 samples of primary blood cells

Mutation
All targets are cross-referenced with the Catalogue of Somatic Mutations in Cancer (COSMIC). It is designed to store and display somatic mutation information and related details and contains information relating to human cancers.

Biological Structures
The identity of available biological structures on drug targets was retrieved from the RCSB Protein Databank for you to easily review what available structures of drug targets exist.

Targeted Pathways
Described target(s) is/are matched for the involvement in cellular pathways according to BioCarta, KEGG, NCI-Nature and NetPath.

Mechanism
Drug mechanism of action

Developmental Projects
Summary field of developmental projects for the drug, including indication, developmental stage and status. Example:
- Cancer, myeloma – Phase II Clinical Trial – Active
- Cancer, prostate – Phase III Clinical Trial – Ceased

Drug BioSeeker Group's software
Short introduction to drug

Compound Data
Compound type, Chemical name, CAS Number and molecular weight

Patent Data
Available patent information related to the drug is presented here.
Fillings and Approvals
Approvals and submissions
Analyst comments

Deals & Licensing
Collaborations and deals
Availability for licensing

Phase IV Data
Available Phase IV development data, developmental history and scientific data.

Phase III Data
Available Phase III development data, developmental history and scientific data.

Phase II Data
Available Phase II development data, developmental history and scientific data.

Phase I Data
Available Phase I development data, developmental history and scientific data.

Phase 0 Data
Available Phase 0 development data, developmental history and scientific data.

Preclinical Data
Available preclinical development data, developmental history and scientific data.

Discovery Data
Available discovery development data, developmental history and scientific data.

Application Features
Search, Find and Filter Panel with Initial Result Presentation
With this panel you can define your selectivity in each drug search with up to 24 different drug specific parameters. Each parameter has multi-select options to them and can be used as either an inclusion parameter or exclusion parameter.

The initial result table is a dynamic sortable table which gives you a fast overview of found results and can be narrowed down further by your own additional keywords.

Direct linkage from inside the application to related internet resources
- Drug data is linked to search engines like Google and PubMed
- Drug target data is linked directly to BioCarta, Human Protein Atlas, KEGG, NCI-Nature, NetPath etc.
- Direct links to company web pages of companies

Dynamic Report Generator
The dynamic report generator lets you with ease and speed generate html reports directly in your web browser (Internet Explorer and FireFox), whether it is a single drug profile or an entire search you want have a report of.

System Requirements
- Operating system: Windows (2000/XP/Vista/7/8) for Mac Users the service is only available online
- Browser Application (Internet Explorer, Firefox, Chrome, Safari)
- Internet access (to access related internet resources)

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