

Resource Summary Report

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LAMHDI: The Initiative to Link Animal Models to Human Disease

RRID:SCR_008643

Type: Tool

Proper Citation

LAMHDI: The Initiative to Link Animal Models to Human Disease (RRID:SCR_008643)

Resource Information

URL: <http://www.lamhdi.org/>

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Description: THIS RESOURCE IS NO LONGER IN SERVICE, it has been replaced by Monarch Initiative. LAMHDI, the initiative to Link Animal Models to Human Disease, is designed to accelerate the research process by providing biomedical researchers with a simple, comprehensive Web-based resource to find the best animal model for their research. LAMHDI is a free, Web-based, resource to help researchers bridge the gap between bench testing and human trials. It provides a free, unbiased resource that enables scientists to quickly find the best animal models for their research studies. LAMHDI includes mouse data from MGI, the Mouse Genome Informatics website; zebrafish data from ZFIN, the Zebrafish Model Organism Database; rat data from RGD, the Rat Genome Database; yeast data from SGD, the Saccharomyces Genome Database; and fly data from FlyBase. LAMHDI.org is operational today, and data is added regularly. Enhancements are planned to let researchers contribute their knowledge of the animal models available through LAMHDI. The LAMHDI goal is to allow researchers to share information about and access to animal models so they can refine research and testing, and reduce or replace the use of animal models where possible. LAMHDI Database Search: LAMHDI brings together scientifically validated information from various sources to create a composite multi-species database of animal models of human disease. To do this, the LAMHDI database is prepared from a variety of sources. The LAMHDI team takes publicly available data from OMIM, NCBI's Entrez Gene database, Homologene, and WikiPathways, and builds a mathematical graph (think of it as a map or a web) that links these data together. OMIM is used to link human diseases with specific human genes, and Entrez provides universal identifiers for each of those genes. Human genes are linked to their counterpart genes in other species with Homologene, and those genes are linked to other genes tentatively or authoritatively using the data in WikiPathways. This preparatory work gives LAMHDI a web of human diseases linked to

specific human genes, orthologous human genes, homologous genes in other species, and both human and non-human genes involved in specific metabolic pathways associated with those diseases. LAMHDI includes model data that partners provide directly from their data structures. For instance, MGI provides information about mouse models, including a disease for each model, as well as some genetic information (the ID of the model, in fact, identifies one or more genes). ZFIN provides genetic information for each zebrafish model, but no diseases, so zebrafish models are integrated by using the genes as the glue. For instance, a zebrafish model built to feature the zebrafish PKD2 gene would plug into the larger disease-gene map at the node representing the zebrafish PKD2 gene, which is connected to the node representing the human PKD2 gene, which in turn is connected to the node representing the human disease known as polycystic kidney disease. (Some of the partner data LAMHDI receives can even extend the base map. MGI provides a disease for every model, and in some cases this allows the creation of a disease-to-gene relationship in the LAMHDI database that might not already be documented in the OMIM dataset.) With curatorial and model information in hand, LAMHDI runs a lengthy automated process that exhaustively searches for every possible path between each model and each disease in the data, up to a set number of hops, producing for each disease-to-model pair a set of links from the disease to the model. The algorithm avoids circular paths and paths that include more than one disease anywhere in the middle of the path. At the end of this phase, LAMHDI has a comprehensive set of paths representing all the disease-to-model relationships in the data, varying in length from one hop to many hops. Each disease-to-model path is essentially a string of nodes in the data, where each node represents a disease, a gene, a linkage between genes (an orthologue, a homologue, or a pathway connection, referred to as a gene cluster or association), or a model. Each node has a human-friendly label, a set of terms and keywords, and - in most cases - a URL linking the node to the data source where it originated. When a researcher submits a search on the LAMHDI website, LAMHDI searches for the user's search terms in its precomputed list of all known disease-to-model paths. It looks for the terms not only in the disease and model nodes, but also in every node along each path. The complete set of hits may include multiple paths between any given disease-to-model pair of endpoints. Each of these disease-to-model pair sets is ordered by the number of hops it involves, and the one involving the fewest hops is chosen to represent its respective disease-to-model pair in the search results presented to the user. Results are sorted by scores that represent their matches. The number of hops is one barometer of the strength of the evidence linking the model and the disease; fewer hops indicates the relationship is stronger, more hops indicates it may be weaker. This indicator works best for comparing models from a single partner dataset: MGI explicitly identifies a disease for each mouse model, so there can be disease-to-model hits for mice that involve just one hop. Because ZFIN does not explicitly identify a disease for each model, no zebrafish model will involve fewer than four hops to the nearest disease, from the zebrafish model to a zebrafish gene to a gene cluster to a human gene to a human disease.

Synonyms: LAMHDI

Resource Type: data or information resource, database

Keywords: fly, animal, biologic, community, database, disease, genome, human, informatics, international, internet, knockout, model, mouse, network, organism, pathway, primate, rat, research, saccharomyces, testing, treatment, trial, worm, zebrafish

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Availability: THIS RESOURCE IS NO LONGER IN SERVICE

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Resource ID: SCR_008643

Alternate IDs: nif-0000-32417

Record Creation Time: 20220129T080248+0000

Record Last Update: 20260729T044210+0000

Ratings and Alerts

No rating or validation information has been found for LAMHDI: The Initiative to Link Animal Models to Human Disease.

No alerts have been found for LAMHDI: The Initiative to Link Animal Models to Human Disease.

Data and Source Information

Source: [SciCrunch Registry](#)

Usage and Citation Metrics

We found 2 mentions in open access literature.

Listed below are recent publications. The full list is available at [kravitz2](#) .

Bandrowski A, et al. (2015) The Resource Identification Initiative: A cultural shift in publishing. F1000Research, 4, 134.

Maynard SM, et al. (2013) A knowledge based approach to matching human neurodegenerative disease and animal models. Frontiers in neuroinformatics, 7, 7.