

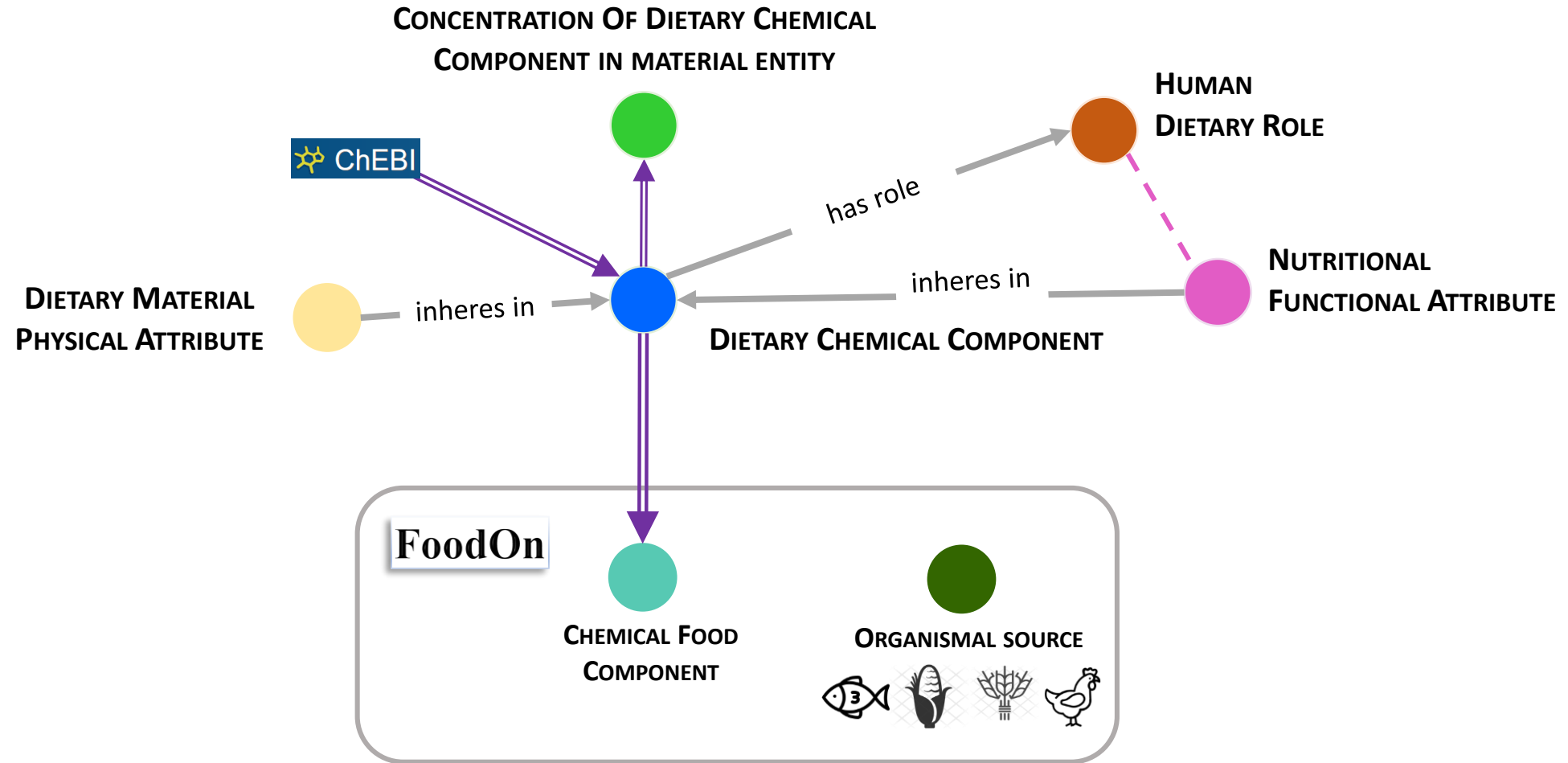
Progress and prospects for the Compositional Dietary Nutrition Ontology

Liliana Andrés-Hernández, Kai Blumberg, Damion Dooley, Britt Burton-Freeman, Paul Magelli, Shavawn M. Forester, Graham J. King.



Progress







COMPOSITIONAL DIETARY
NUTRITION ONTOLOGY

Nutritional Component

Class

Component

- ☐ concentration of
- ☐ dietary chemical component
- ☐ ash
- ☐ carbohydrate
 - ☒ available carbohydrate
 - ☐ dietary fibre
 - ☐ disaccharide
 - ☐ monosaccharide
 - ☐ oligosaccharide
 - ☐ polysaccharide
- ☐ dry plant matter
- ☐ lipid
- ☐ mineral nutrient
- ☐ plant secondary metabolite
- ☐ protein
- ☐ salt
- ☐ vitamin
- ☐ water

Food / crop source

Food group

Crop

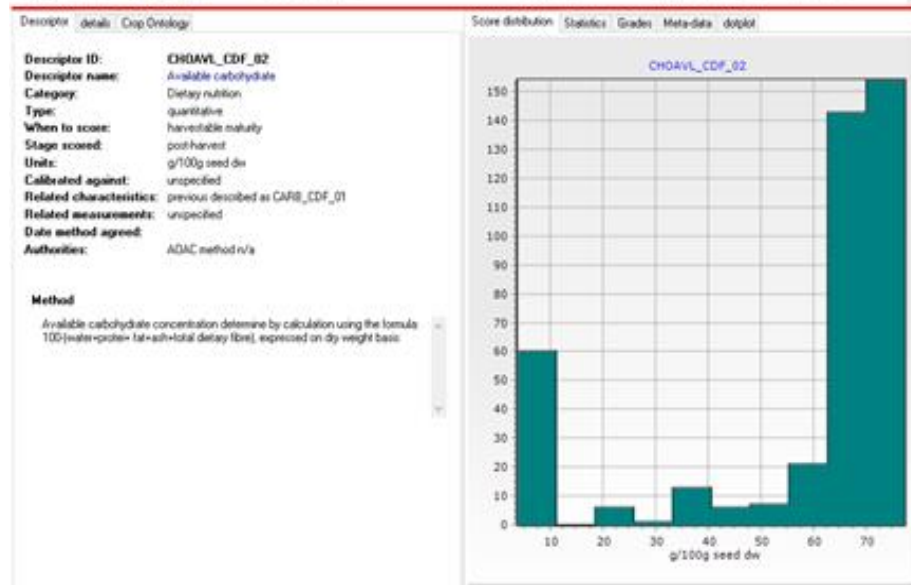
Crop part

FoodOn

Data source

☒ CropStoreDB ☐ GeoNutritional ☐ Food Composition

20 descriptors					
category	descriptor_id	descriptor_name	contact_person	stage_scored	score_type
Dietary nutrition	ASH_MFU_01	Ash concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	CARB_CDF_03	Total carbohydrate	unspecified	harvestable maturity	quantitative
Dietary nutrition	CHOAVL_CDF_02	Available carbohydrate	unspecified	harvestable maturity	quantitative
Dietary nutrition	DM_CAL_01	Dry matter	unspecified	harvestable maturity	quantitative
Dietary nutrition	ENER_CAL_01	Metabolized energy	unspecified	harvestable maturity	quantitative
Dietary nutrition	F16D0_FAMES_01	Palmitic acid concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	F18D1_FAMES_01	Oleic acid concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	F18D2_FAMES_01	Linoleic acid concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	F18D3_FAMES_01	alpha (Linolenic) acid concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	F18D0_FAMES_01	Stearic acid concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	F20D0_FAMES_01	Arachidic acid concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	F22D0_FAMES_01	Behenic acid concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	F24D0_FAMES_01	Lignoceric acid concentration	unspecified	harvestable maturity	quantitative
Dietary nutrition	FAT_CE_01	Lipid concentration	unspecified	harvestable maturity	quantitative



https://www.ebi.ac.uk/ols/ontologies/cdno/terms?uri=http://purl.obolibrary.org/obo/cdno/CHOAVL_CDF_0200033

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concentration of available carbohydrate in material entity

http://purl.obolibrary.org/obo/cdno/CHOAVL_CDF_0200033 Copy

The concentration of available carbohydrate when measured in some material entity.

Synonyms: material entity available carbohydrate concentration

Tree view Term mappings Term history

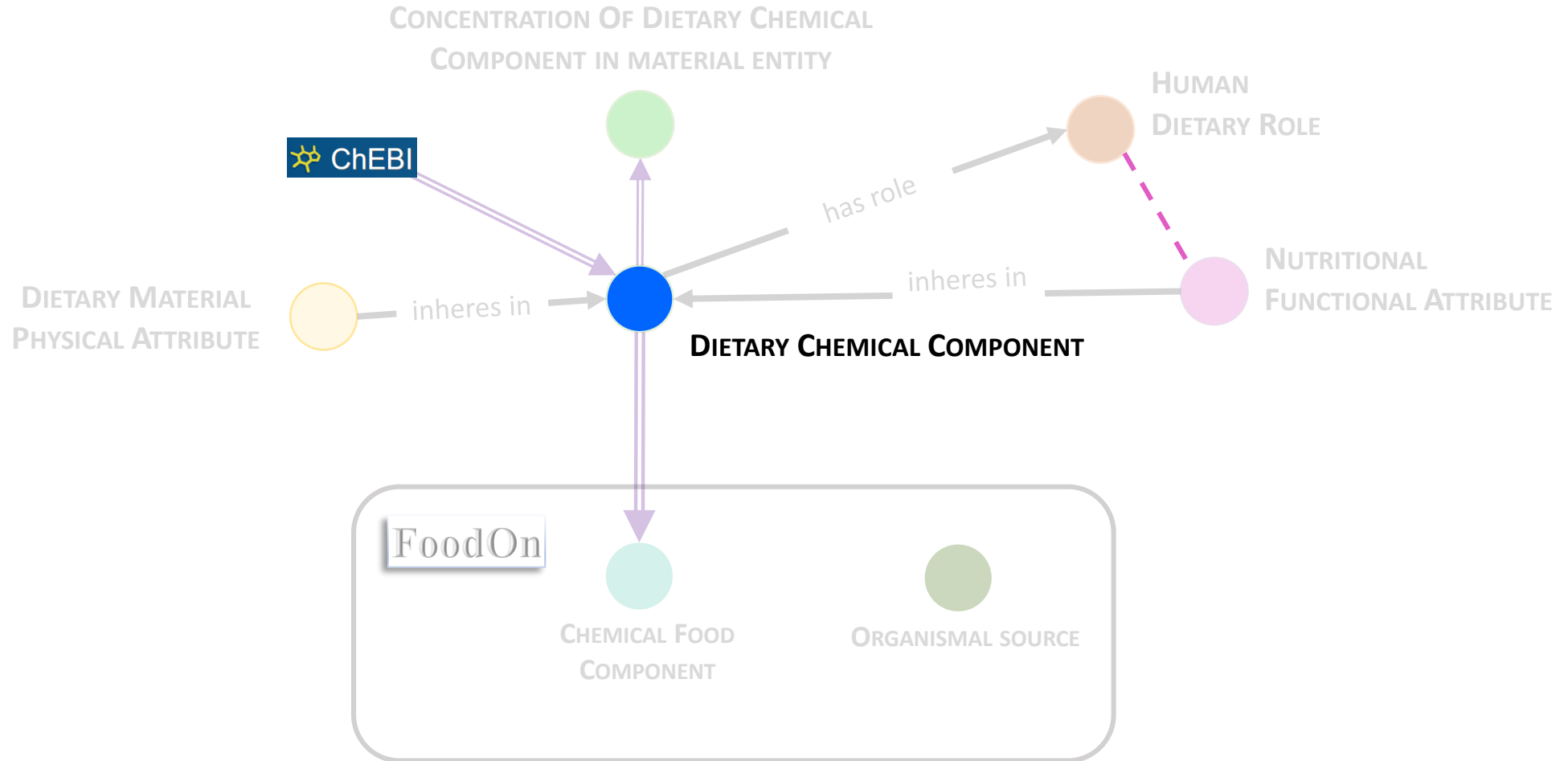
- concentration of
 - concentration of available carbohydrate in material entity
 - concentration of carbohydrate in material entity
 - concentration of available carbohydrate in material entity
 - concentration of dietary nutritional component in material entity
 - concentration of carbohydrate in material entity
 - concentration of available carbohydrate in material entity

Term information

database cross reference

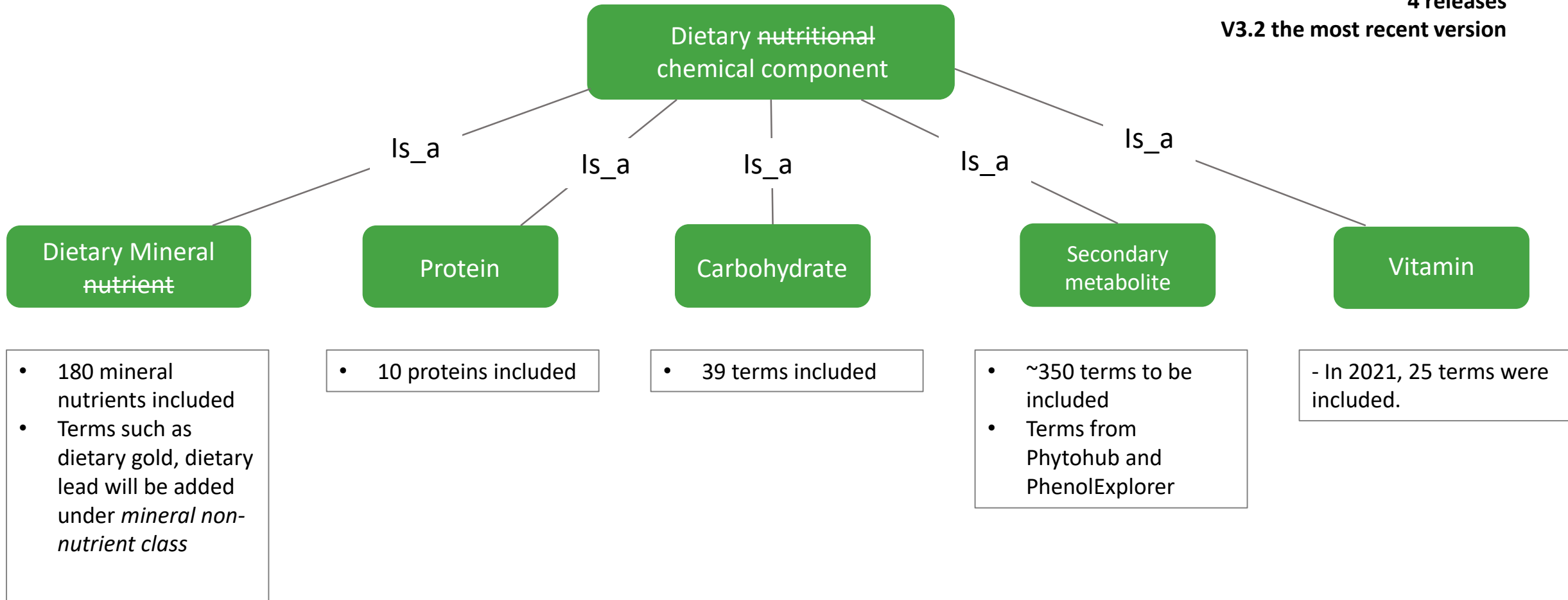
- USDA_NDB: 1005
- INFOODs: CHOAVL
- INFOODs: CHOAVL-
- INFOODs: CHOAVLDF
- INFOODs: CHOAVLM
- INFOODs: CHOAVLO

hasDbXref



- 10 upper level classes corresponding to proximate analysis: carbs, protein, fats...
 - 604 assigned to CHEBI and ENVO
 - 81 formally described in CDNO

4 releases
V3.2 the most recent version



Prospects



Secondary metabolites



Dr. Burton-Freeman



ILLINOIS TECH

plant secondary metabolite

- + Melanin
- + alkaloid
- choline
- + flavonoids
- glycine betaine
- + hydroxycinnamic acid
- inositol
- + methyl ketone
- + naphthoquinone
- + organic acid
- + phenolic acid
- + phenols
- + phenylpropanoid
- + polyol
- + stilbenoid
- taurine
- + terpenoid
- + xanthones

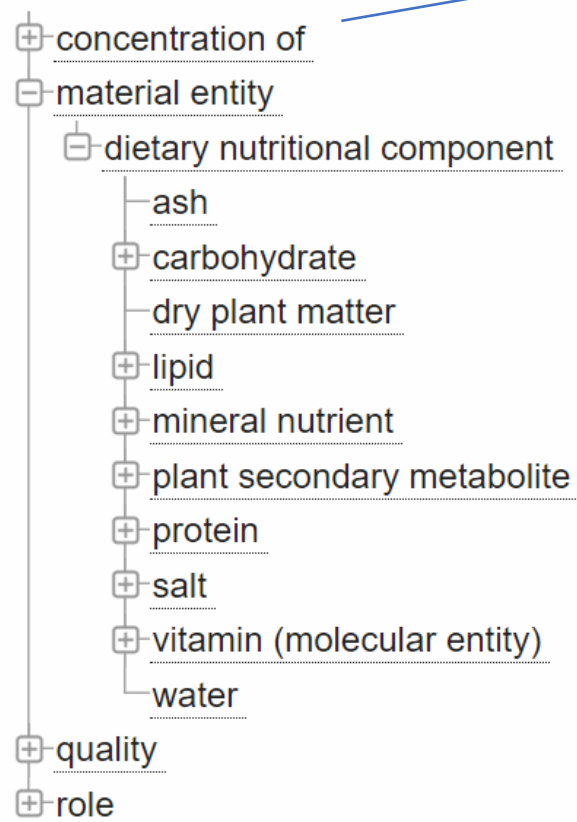
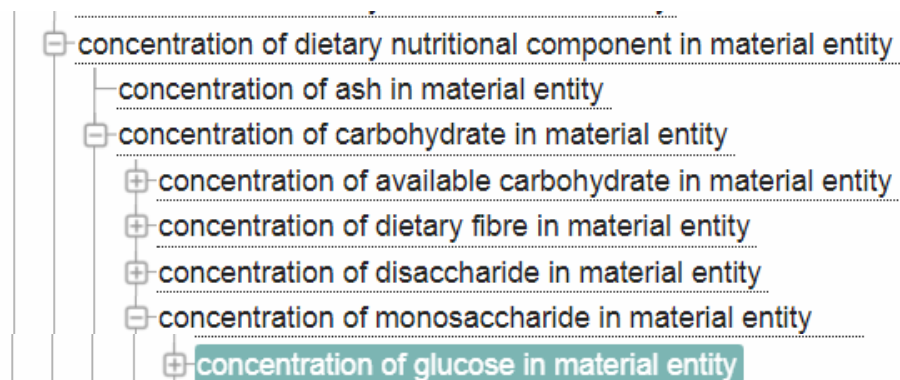


- v3.0 of CDNO contains 277 secondary metabolites
- ~350 Phenol-Explorer, PhytoHub, ChEBI, E-numbers, USDA terms will be added in CDNO
- ~350 terms to be added in next releases



concentration of glucose in material entity

http://purl.obolibrary.org/obo/CDNO_0200013 Copy



Term information

database cross reference

- INFOODs: GLUS
- INFOODs: GLUFB
- USDA_NDB: 1011

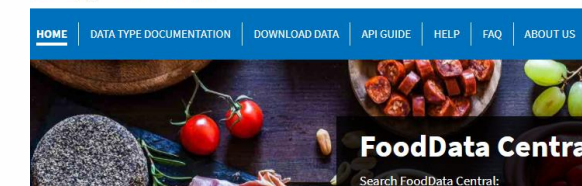
hasDbXref

INFOODs: GLUS

USDA_NDB: 1011

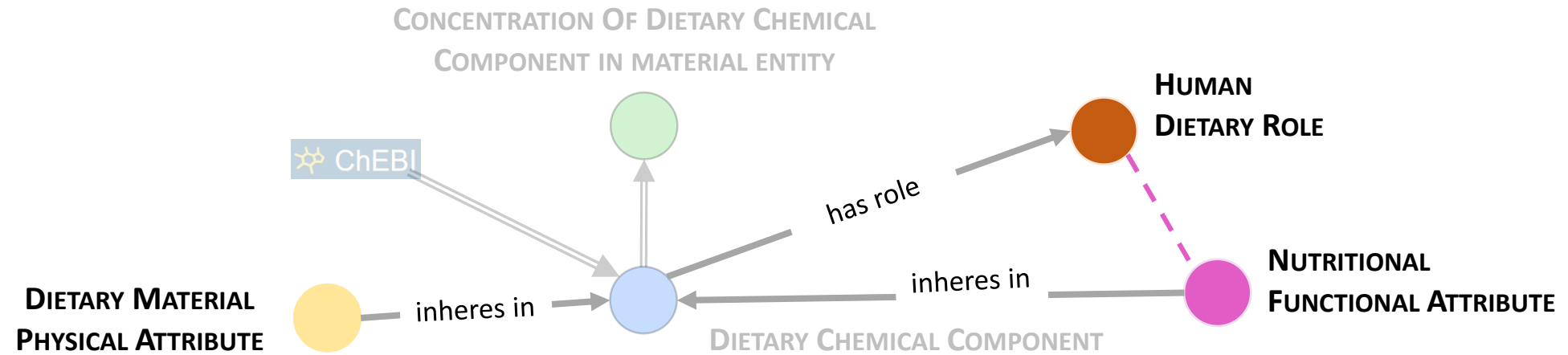
INFOODs: GLUFB

USDA U.S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service



1005	Carbohydrate, by difference
1050	Carbohydrate, by summation
1123	Lutein + zeaxanthin
1161	cis-Lutein/Zeaxanthin
1008	Energy





energy ENVO:2000015

http://purl.obolibrary.org/obo/ENVO_2000015

A disposition which is realized during the execution of work, the emission of heat, or the possession of mass.

Ontology: [The Environment Ontology](#) ENVO

Also in: ECTO RBO

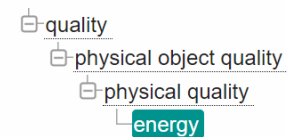
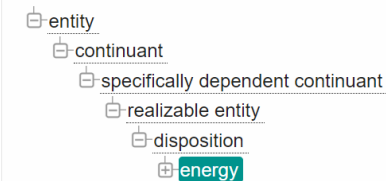
energy PATO:0001021

http://purl.obolibrary.org/obo/PATO_0001021

A physical quality inhering in a bearer by virtue of the bearer's capacity to do work.

Ontology: [PATO - the Phenotype And Trait Ontology](#) PATO

Also in: AGRO FLOPO MICRO MS OBA





FFAR partnered with the Global Alliance for Improved Nutrition (GAIN) to launch Harvest for Health initiative to accelerate the development of underutilized crops, increasing the diversity of foods in the marketplace.

Grant application FFAR



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Grants & Funding

FFAR's Impact

News

Harvest for Health Breakthrough Crop Challenge



Bambara groundnut (*Vigna subterranea*)





Graham J. King



Ramil Mauleon



WISEcode



Paul Magelli,



Mike Schmitt



Shavawn Forester



Ramona Walls



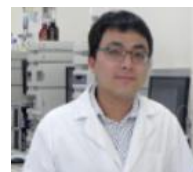
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Magalie Weber



Matthew Lange



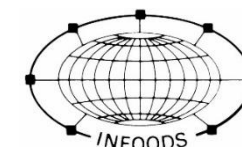
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/Jayne Ireland