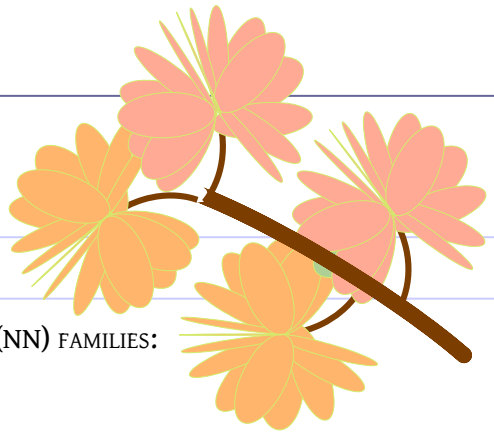
Chapter 17. Life Sciences



Last revision: 2024-07-16

17.1. Introduction

Biology and life sciences are represented in three Nwehu Nuswei (NN) FAMILIES:

5: ᒪ--- *Y*--- Animals and Macro-Biology

9: ᖰ--- *C*--- Plants and Micro-Biology

D: ᖵ--- *J*--- Life Sciences

Note the unifying use of palatal consonant initials in each FAMILY.

17.2. Classification

As of this writing (2021-03-22), the organizational structure of life on Earth is debated with great energy, and new discoveries are upsetting established classification systems with increasing frequency. NN cannot attempt to mirror this dynamic situation. Insrtead, NN uses the principle that it represents general human perception of how the world is organized.

Two NN FAMILIES are used to represent living things and aspects of their study: ᒪ--- Y--- and ᖰ--- C---. Following our 17th century predecessor John Wilkins, these were originally intended to represent "animals" and "plants" as perceived by most people. That general intent has been followed, though with the addition of life-forms and fields of study that don't fit neaty into either category.

Humans most easily perceive things in our general size-range, and usually need to talk about such things more than things we cannot perceive directly. Hence NN devotes the greatest vocabulary space to animals and plants we can see, particularly those we see most often and are most impactful (either useful or dangerous).

Less common and less visible living things are represented using their general classification followed by one or more ᓕ--- *F*--- words established by authoritative groups of biologists. (This is similar to English-speakers' use of Latin scientific names for the less common life-forms.) This will probably not be done

initially for NN, but a similar system for classification of minerals is illustrated in GENUS ᔑᓀ-- *Dw*-- in Chapter 17.

17.2.1. FAMILY Structure

General terminology is in GENI 1-7:

- Common animals (1792 words): *yi-- ye-- yei-- ya-- yai-- yo-- yoi*
- Common plants (1792 words): *ci-- ce-- cei-- ca-- cai-- co-- coi*

Fields of science are in GENI 8-15:

- Macro-Biology and ecology (2048 words): *yw-- ywi-- ywe-- ywei-- ywa-- ywai-- ywo-- ywoi--*
- Botany and microbiology (2048 words): *cw-- cwi-- cwe-- cwei-- cwa-- cwai-- cwo-- cwoi--*
- Applied fields of science add -ᒐ *-i* in the first syllable (1024 words)

FAMILY ᔦ--- *J*--- 'Life Sciences' has a separate structure.

17.2.2. ᒪ *Y* 5. Animals and Macro-Biology

The ᒪ--- *Y*--- FAMILY represents animals and fields of study that usually don't require microscopic visualization.

Initial Syllable	IPA	NN	Semantics
yu-	ʒə	𐤴𐤉	Animal Classification
yi-	ʒi	𐤴𐤋	Common domestic and semi-domestic creatures
ye-	ʒe	𐤴𐤃	Herbivores
yei-	ʒɛj	𐤴𐤆	Fish
ya-	ʒa	𐤴𐤓	Birds
yai-	ʒaj	𐤴𐤁	Invertibrates
yo-	ʒɔ	𐤴𐤇	Carnivores
yoi-	ʒɔj	𐤴𐤅	Pests
yw-	ʒu	𐤴𐤊	Zoology
ywi-	ʒwi	𐤴𐤌	Animal husbandry and Veterinary Medicine
ywe-	ʒwe	𐤴𐤄	Paleobiology
ywei-	ʒwɛj	𐤴𐤆	Paleo Life Forms
ywa-	ʒwa	𐤴𐤐	Animal Growth and Development
ywai-	ʒwaj	𐤴𐤕	Historical Development of Life Forms
ywo-	ʒwɔ	𐤴𐤒	Ecology
ywoi-	ʒwɔj	𐤴𐤕	Sustainable Living

𐤃𐤐 17.1: Animals and Macro-Biology

The first GENUS, 𐤴𐤉-- *Yu*--, is used for technical classification of animals by recognized biology authorities. Geni 𐤴𐤌-- *Yi*-- through 𐤴𐤅-- *Yoi*-- represent animals according to their commonly-perceived relationship to humans (as evidenced by animal-words found most commonly in world languages). GENI 𐤴𐤊--*Yw*-- through 𐤴𐤕-- *Ywoi*-- represent concepts in various fields of biological science.

17.2.3. 𐤋 C Plants and Micro-Biology

The 𐤋--- *C*--- FAMILY represents plants, life-forms (including viruses) that cannot be seen with the naked eye, and related fields of study such as genetics.

Initial Syllable	IPA	NN	Semantics
cu-	ʧə	ϒ𐤉	Plant Classification
ci-	ʧi	ϒ𐤃	Common Domestic and Semi-Domestic Plants
ce-	ʧe	ϒ𐤋	Bacteria and viruses
cei-	ʧɛj	ϒ𐤌	Fungi
ca-	ʧa	ϒ𐤓	Mid-size Plants
cai-	ʧaj	ϒ𐤅	Small Plants
co-	ʧɔ	ϒ𐤍	Trees
coi-	ʧɔj	ϒ𐤎	Disease-Causing Microorganisms
cw-	ʧu	ϒ𐤊	Botany
cwi-	ʧwi	ϒ𐤏	Horticulture and Plant Health
cwe-	ʧwe	ϒ𐤇	Cellular Biology 1
cwei-	ʧwɛj	ϒ𐤈	Cellular Biology 2
cwa-	ʧwa	ϒ𐤐	Plant Physiology 1
cwai-	ʧwaj	ϒ𐤑	Plant Physiology 2
cwo-	ʧwɔ	ϒ𐤔	Plant Anatomy 1
cwoi-	ʧwɔj	ϒ𐤒	Plant Anatomy 2

𐤃𐤐 17.2: Plants and Micro-Biology

17.2.4. ϒ𐤉 13. Life Sciences

FAMILY 13 is dedicated to life sciences in general, including anatomy, physiology, genetics, neurology, brain study, and organic chemistry. (Medical science is represented in FAMILY X--- *B*---.)

Initial Syllable	IPA	NN	Semantics
ju-	ʤə	ᓭᐞ	Technical Terms 1
ji-	ʤi	ᓭᑊ	Technical Terms 2
je-	ʤe	ᓭᑉ	Common Animal Anatomy 1
jei-	ʤɛj	ᓭᑋ	Common Animal Anatomy 2
ja-	ʤa	ᓭᑕ	Common Animal Physiology 1
jai-	ʤaj	ᓭᑖ	Common Animal Physiology 2
jo-	ʤɔ	ᓭᑏ	Lesser-known Animal Anatomy
joi-	ʤɔj	ᓭᑐ	Lesser-known Animal Physiology
jw-	ʤu	ᓭᓄ	Genetics 1
jwi-	ʤwi	ᓭᓅ	Genetics 2
jwe-	ʤwe	ᓭᓇ	(undefined)
jwei-	ʤwɛj	ᓭᓈ	(undefined)
jwa-	ʤwa	ᓭᓕ	Organic Chemistry 1
jwai-	ʤwaj	ᓭᓖ	Organic Chemistry 2
jwo-	ʤwɔ	ᓭᓍ	Neurology
jwoi-	ʤwɔj	ᓭᓎ	Brain Structure and Function

Dp 17.3: Life Sciences

17.3. Anatomy

17.3.1. Anatomy and Physiology

Generally speaking, "Anatomy" is the structure and "Physiology" is the function of the parts of living organisms. Since structure and function are closely related, there are some arbitrary decisions about where to represent some topics. These and animal-related topics are represented in FAMILY ᓭ--- *J*---; plant- and microbiology-related topics in FAMILY ᓯ--- *C*---.

Genetics (512 words):	ᓭᓄ--	*jwi--*
Animal Physiology (512 words):	ᓭᑕ--	*jai--*
Animal Anatomy (512 words):	ᓭᑉ--	*jei--*
Organic chemistry (512 words):	ᓭᓕᑕ--	*jwai--*
Neurology, including brain (512 words):	ᓭᓍᑕ--	*jwoi--*
Plant Physiology (512 words):	ᓯᓕᑕ--	*cwai--*
Plant Anatomy (512 words):	ᓯᓍᑕ--	*cwoi--*
Cellular Biology (512 words):	ᓯᓍᑉ--	*cwei--*

𝔇ρ 17.4: Anatomy and Physiology words

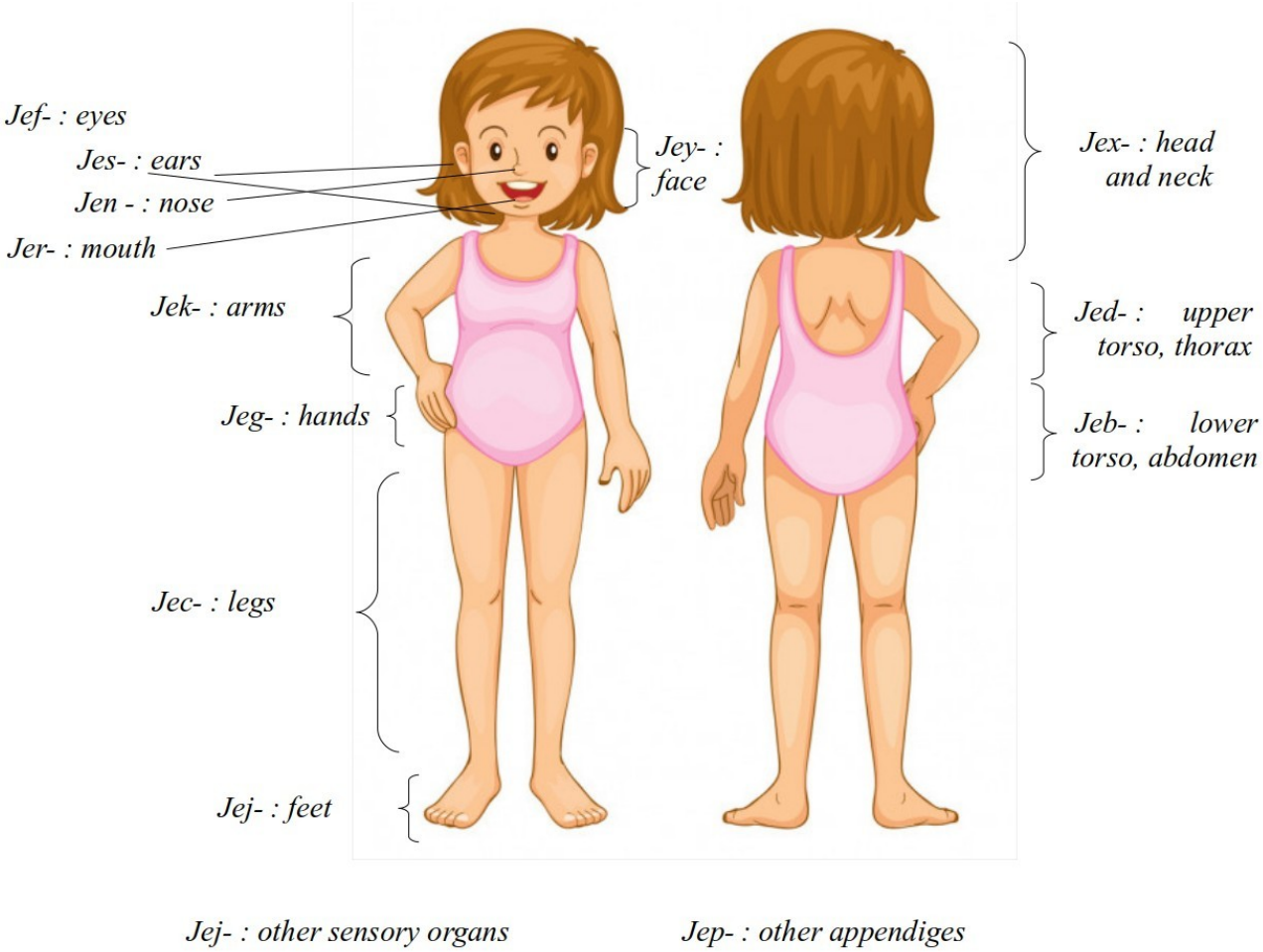
General Life Science terminology is represented in SPECIES 𐑘𐑦𐑣- *Jeh-* and 𐑘𐑦𐑣𐑤- *Jeih-* (32 words)

External structures are represented in GENUS 𐑘𐑦-- *Je--*; Internal and common elements in 𐑘𐑦𐑤-- *Jei--* (4064 words each).

The basis of NN anatomical vocabulary is the mammalian body, specifically the human body. Additional vocabulary sections are dedicated to features of fish, amphibian, reptile, bird, insect, arachnid, and other phyla with structures not found in mammalian/human structure.

Human anatomy is illustrated in 𝔇ρ 17.5.

17.3.2. External Anatomy



𝔇ρ 17.5: External Anatomy

17.3.3. NN Representation of Animal Anatomy

In addition to the external anatomy depicted above, internal structures are represented by GENUS ϒ𐤉-- *Jei*--. Though not internal, skin and hair are also represented in the ϒ𐤉-- *Jei*-- GENUS because they are not necessarily localized in any one part of the body.

Dp 17.6: External and Internal Animal Anatomy Species

External Animal Anatomy		General and Internal Animal Anatomy	
jeh-	General Anatomy Terminology	*jeih-*	Internal Anatomy Terminology
jex-	head and neck	*jeix-*	reproductive anatomy: male
jes-	ears	*jeis-*	reproductive anatomy: female
jef-	eyes	*jeif-*	skin and hair
jer-	mouth	*jeir-*	nervous anatomy
jey-	face	*jeiy-*	circulatory anatomy
jen-	nose	*jein-*	musculo-skeletal anatomy 1
jem-	other sensory organs	*jeim-*	musculo-skeletal anatomy 2
jek-	arms	*jeik-*	excretory anatomy
jec-	legs	*jeic-*	exoskeletal anatomy
jet-	wings	*jeit-*	immune system anatomy
jep-	other appendiges	*jeip-*	hormone system anatomy 1
jeg-	hands	*jeig-*	hormone system anatomy 2
jej-	feet	*jeij-*	gestational anatomy
jed-	upper tor	*jeid-*	digestive anatomy 1
jeb-	lower tor	*jeib-*	digestive anatomy 2

Jem-: other sensory organs

Within each SPECIES, the central body parts are generally represented from top to bottom in upright creatures, or following the upright model from head-end to rear-end. Limbs and other appendiges as represented from inner (proximal) to outer (distal) end.

Internal anatomy follows the same general principle where appropriate. In organ systems that have a central part, that is represented first – for example, the center of the circulatory system is the heart; the center of the nervous system is the brain. Systems that work in step-by-step processes first represent the part which is first in the process – for example, the first step in the digestive process (the mouth ϒ𐤓- *jer*-) is represented in external anatomy, so the second step (the throat) is first represented in digestive anatomy word-Species (ϒ𐤉𐤋-, *jeib*-).

17.3.4. References

Classification of Science is detailed in “Semantic Domains Outline.ods”

Codes for developing scientific nomenclature: https://en.wikipedia.org/wiki/Nomenclature_codes

https://en.wikipedia.org/wiki/Biology

https://en.wikipedia.org/wiki/Kingdom_(biology)

https://en.wikipedia.org/wiki/Branches_of_science