

Wotayeñets

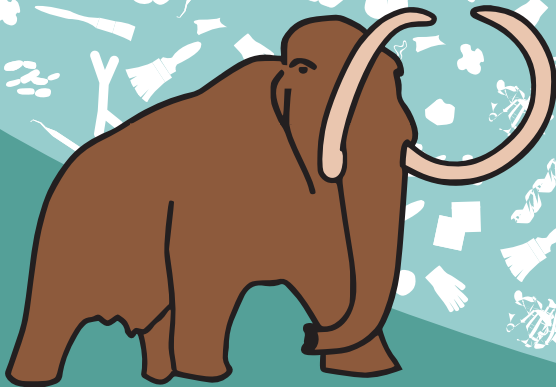
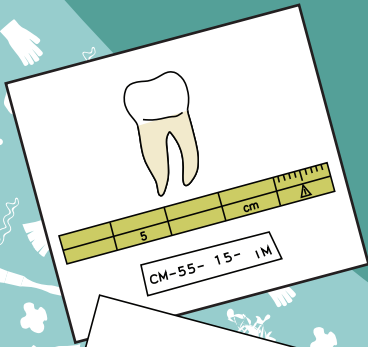
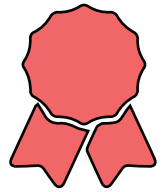


ARR CIENCIAS ARQUEOLÓGICAS

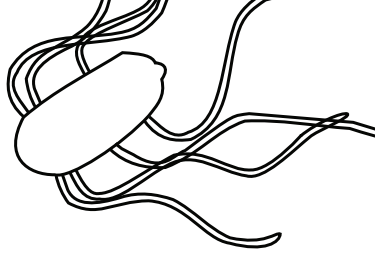
Añ kellkarmats año:

Sochñets

Tsapathoneth amapa
bioarquelóga amapa
phametyeseñets



Pátherr kellkarmats ya'yeñtsoköp
Instituto Max Planck de
Antropología Evolutiva



Wotayeñets

ARR CIENCIAS ARQUEOLÓGICAS

Añ kellkarmats año:

Sochñets

**Tsapathoneth amapa
bioarquelóga amapa
phametyeseñets**



Pátherr kellkarmats ya'yeñtsokëp
Instituto Max Planck de
Antropología Evolutiva

Áñ orrtátene: Instituto Max Planck de Antropología Evolutiva

Edetora: Christina Warinner

Poñmapoer: Jessica Hendy

Ayenpañneshha:

Zandra Fagernäs

Jessica Hendy

Allison Mann

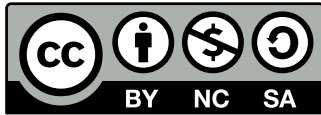
Åshild Vågane

Ke Wang

Christina Warinner

Añ a'poktáte, ñoñtso Yanesha: Didier Dennie Lopez Francis

Añ kellkarmats ya'yeñtsokëp ayexhkatareth arrotheñ pátherr curso all thorrenet temantátayeñets científica.



Attribution-NonCommercial-ShareAlike

CC BY-NC-SA

DOI: 10.17617/2.3434750

2022



¿ESES HA YET?

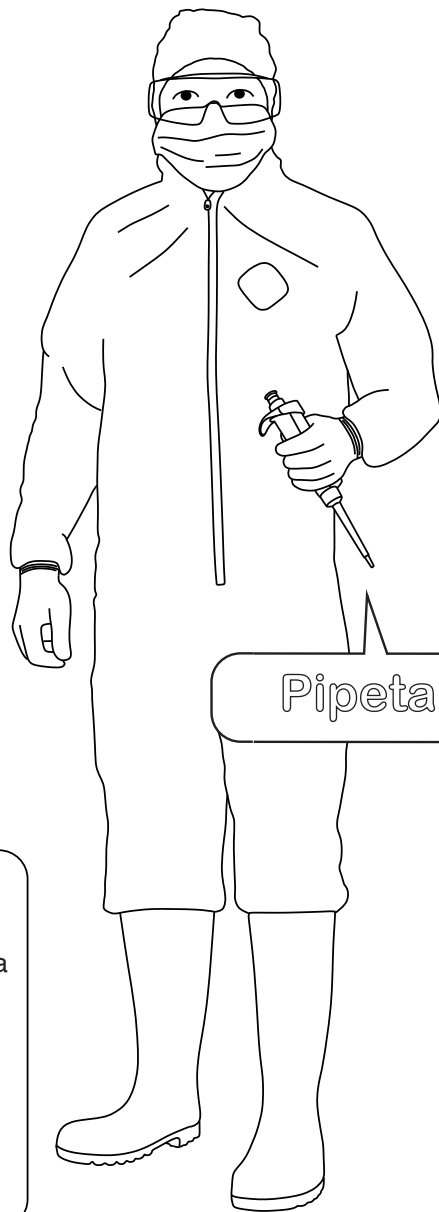
Yá bioarqueólogonesha añey etsotrronesha tharromar yesherbhaten enyeñets científica ñamha panamenare phayeñtsoxhno atthoch yethorra apthotyeyñtsoxhno attho yexhayesa awathotheñ acheñenesha.

Laboratoryopa' ...

Allempo' yetarwasen ADN mellashañare, ya científicooy archa yetarwasen sherbeñtsopo all nanak achatsetareth ñamha añcha yechorrayena llechapaxhno kowenare, wants ñamha wotas atthoch yokwampeñ muestras mellashañare atthoch amá tsetatseto époet ADN etserrare. Científiconesha sherbhatenet panamen phayeñtsoxhno ñamha alloch yephayes atthoch thorret muestras mellashañare.



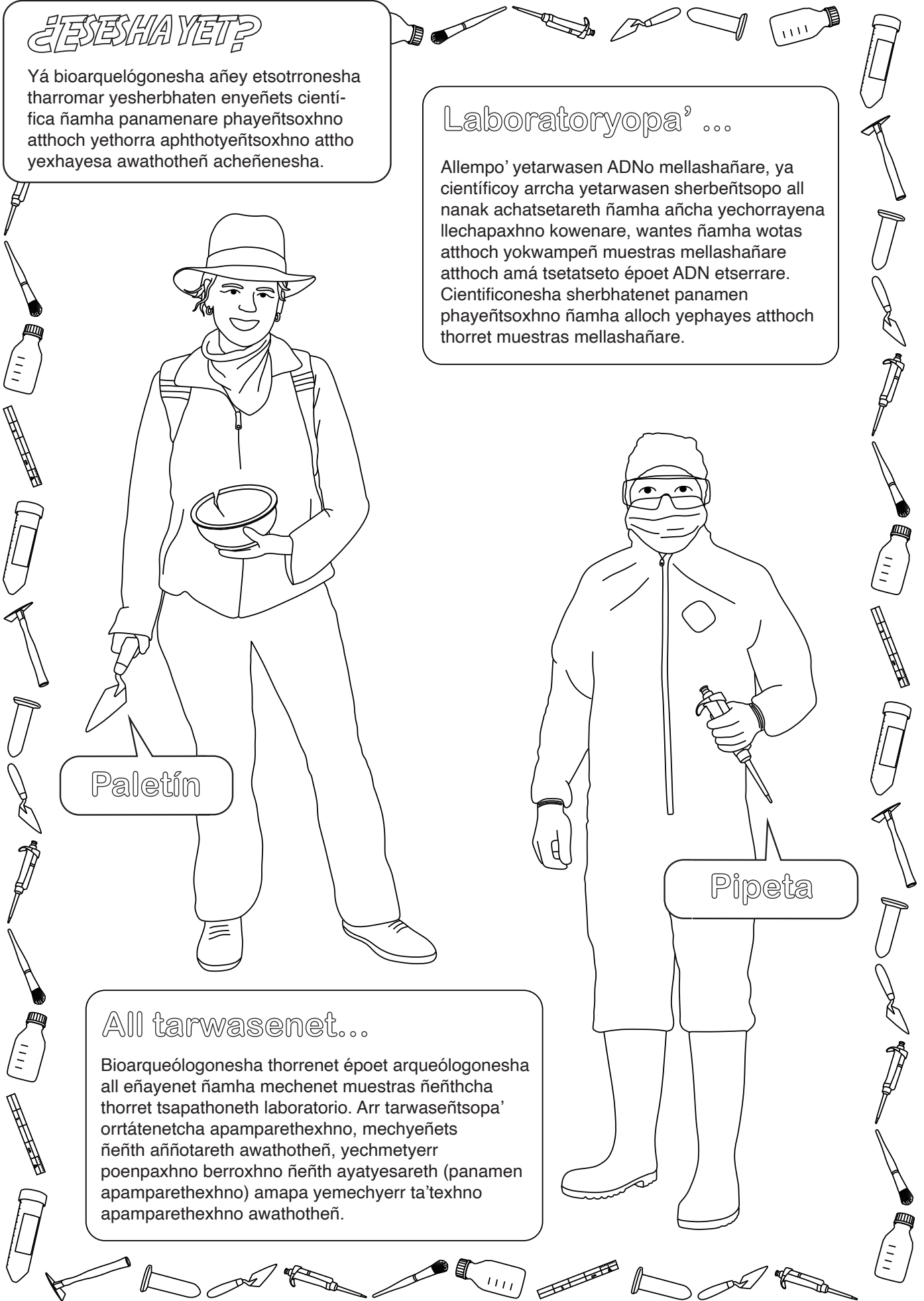
Paletín



Pipeta

All tarwasenet...

Bioarqueólogonesha thorrenet époet arqueólogonesha all eñayenet ñamha mechenet muestras ñeñtcha thorret tsapathoneth laboratorio. Arr tarwaseñtsopa' orrtátenetcha apamparethexhno, mechyeñets ñeñt aññotareth awathotheñ, yechmetyerr poenpaxhno berroxhno ñeñt ayatyesareth (panamen apamparethexhno) amapa yemechyerr ta'texhno apamparethexhno awathotheñ.



Calculos átsokëp

Ñamha achmetareth placa átsots, cálculos asotsokëppa' ñeñtha ye'mokroth echarrtetsa amat allempo' bethey. Cálculospa' remoenet bacterias ñamha rreñets ñeñth poechayetsa, ñeñthpa' sherben attoch yeñoterr ñeñth rrayeseteth ñamha ateth womhcheteth acheñenesha.

Poenpaxhno ñamha átsotsoxhno

Poenpaxhno ñamha átsotsoxhno echenet koñethatets DNA, ñeñthpa' sherben attoch yeñoterr ateth chopeñechyeseteth anetsoxhno awat ñamha atthet, ateth ya'yeseth paklle amapa poech, ñamha ateth yexhkayeseteth. Pa'soxhno acheñenesha ñeñth romats allempo' orrta atsnañets echenan DNA ñeñth atsnañets moetsawet.

Poechayeñets serameko

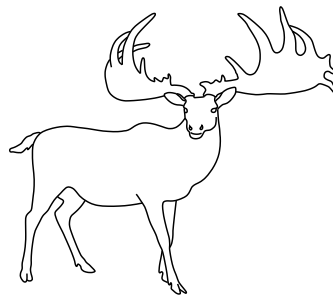
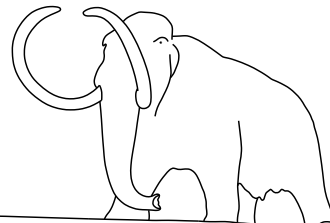
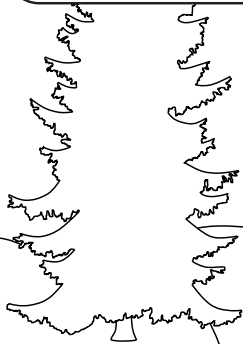
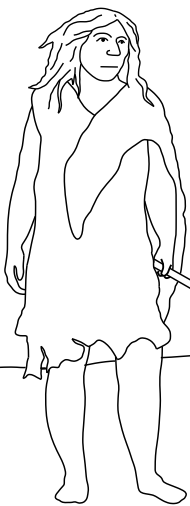
Poechayeñets rreñtsoth ñamha ñeñth poechayesatsa serameko echenan po'proteínas ta'texhno ñamha berroxhno, koñeth ta'texhno ñeñth orrtetsa microscopio ñamha po'sexhno ñeñth nayeseteth rreñtso. Allempo' kowayenet añ poechayeñtsoxhno eñotáteythe ñeñth rrayeseteth ñamha poerrarexhno peteth anetsoxhno awath.

¿ÉSOT YÉNOTEN?

Bioarqueólogonesha sherbhatenet phayeñtsoxhno científico ñamha tecnología etserrare attoch anapoet apthoteñtsoxhno ñeñth awath. Año phayeñtsoxhno a'poktáreth yechatthe shonte eñóteñets arrotheñ pátherr muestra añetholl, pátherr poenpoth, asots amapa wasija.

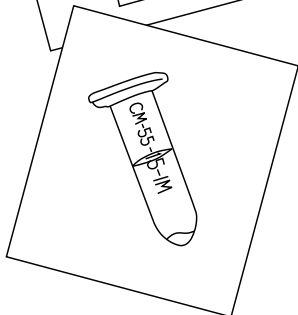
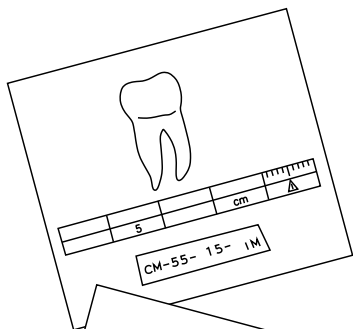
¿PEÑOTEÑET?

Neandertalneshapa' kollawerret awath (40 000) patatsoch xharra mellá char, tharraña DNA neandertal eñallmeñ beth poemokro shonte acheñ ñeñith amá afrekanoyaye.



ERROTHET YORRTERRA YÁ ACHENEY

Ei DNA awath yenpoeney o'ch yeñoter ateth meranma yamotsesha allampaño: neandertalnesha.



Ateth meranmoet

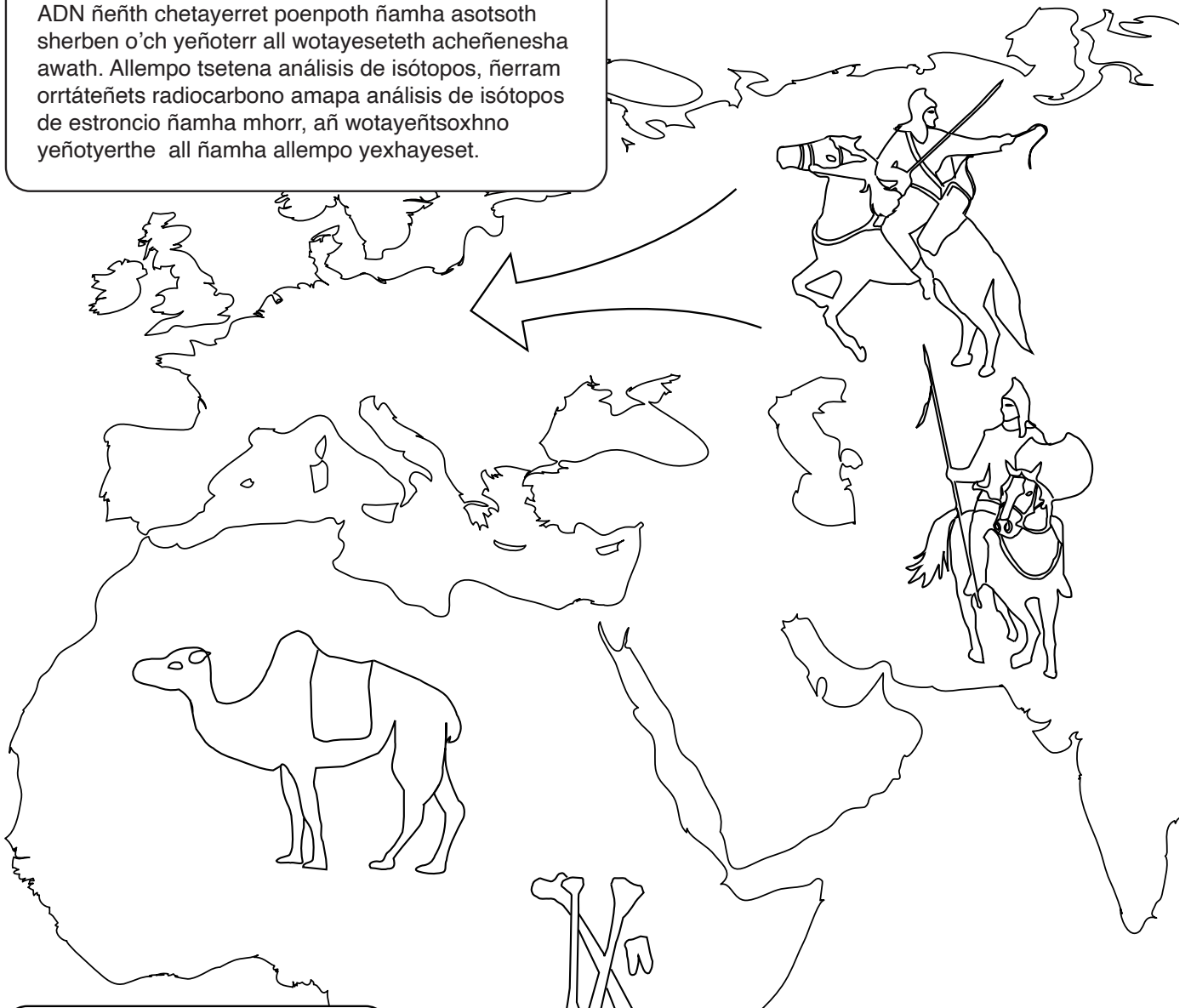
Allempo' yokwayen pa'soxhno ñamha poenpaxhno acheñ awathnanesha, póktena o'ch yechmeterr ateth yexheteth yatañnesha ateth ñamha acheñeneshapa' etsotnomoet ateth yeyxhena the.



WOTAYEÑETS AWATH

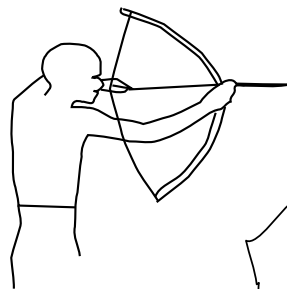
ADN ñeñth chetayerret poenpoth ñamha asotsoth sherben o'ch yeñoterr all wotayeseteth acheñenesha awath. Allempo tsetena análisis de isótopos, ñerram orrtáteñets radiocarbono amapa análisis de isótopos de estroncio ñamha mhorro, añ wotayeñitsoxhno yeñotyerthe all ñamha allempo yexhayeset.

Escitas, Asia Central
Po'charña aser, 700 a. c.

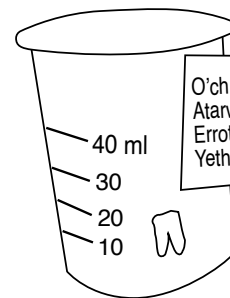


¿PEÑOTEÑET...?

Radiocarbonopa', o ^{14}C , añ pátherr isótopo inestable de carbono ta'texhno arroth cheteñet mhorroth allempo' yexhkateneet poerrar. Berroxhnopa' a'pateneet radiocarbono pochtso allempo rrenet ta'texhno. Radiocarbonopa' wañnen ñerram meten shonte char. Allempo merereneet allpon eñall ^{14}C pátherr muestra awath, yeñotthe allempo ñeñthpa' Beth.



Orrtáteñets radiocarbono



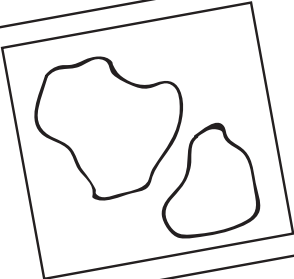
O'ch yechmet muestra:
Atarwasañ:
Errothenat muestra:
Yeth:

Orrtáteñets radiocarbono añ pátherr técnica ñeñth sherbhateneet atthoch yeñoterr pawatheshañ berroxhno ñamha ta'texhno arrowa (40 000) patatsoch xharra mella char awath.

ÑEÑTH RRAYESETETH AWATH

Cientificonesha sherbhatenet microscopio atthoch entet koñethatets rreñtsoxhno en vasijas awath ñamha pa'só acheñenesha. Allempo kowayenet añ "microfósiles" yenpoeney o'ch yeñoterr ñeñth rreñets rrayeseteth awath mayanesha all Mesoamérica awath (2000) epá mella char.

Copán, Honduras
Maya clásico, año 300

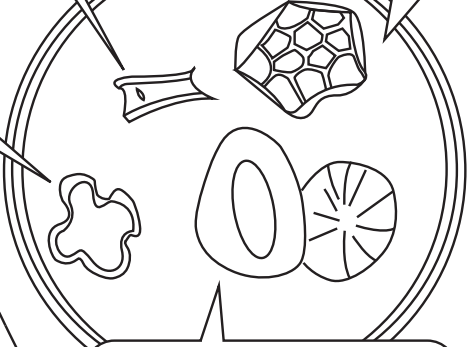


COR-4

Po'fitolito xhop

Po'fragmento ellomrets

Pólen



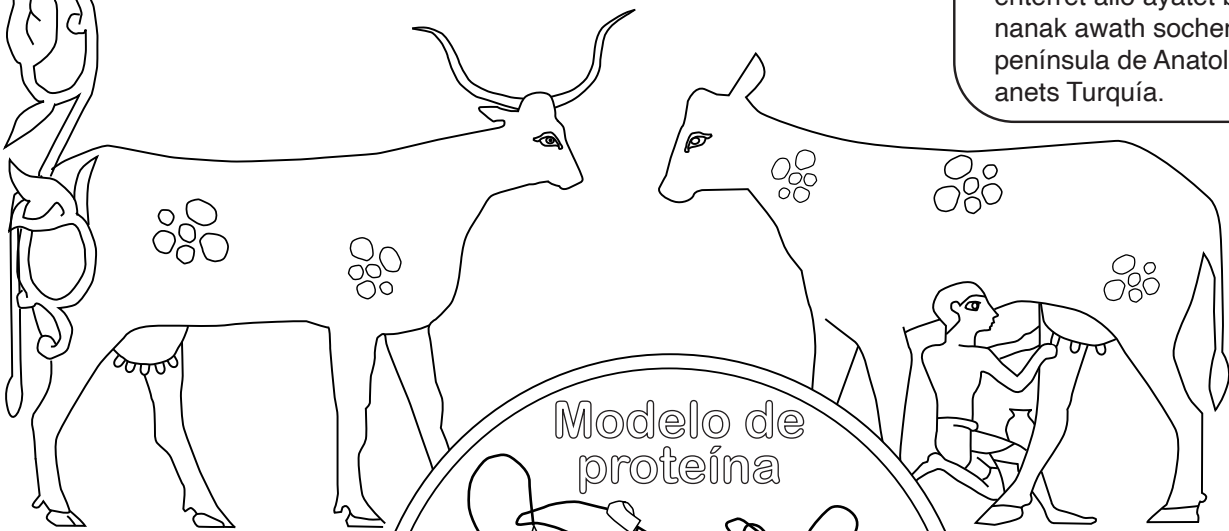
Po'almidon choch/judía

AYATYENETS

Awathotheñ (10 000) xharra mella char, acheñeneshapa' naretet ñarmetsoxhno ñamha ayatet berroxhno akrareth. Wakëshpa' ñeñth ñanem ayatet, ñeñth ñanem ayatañnesha arr sherbhacheteth alló és chechyeseteth, allothpa' ech, momosats ñamha parrem.

¿PEÑOTENET...?

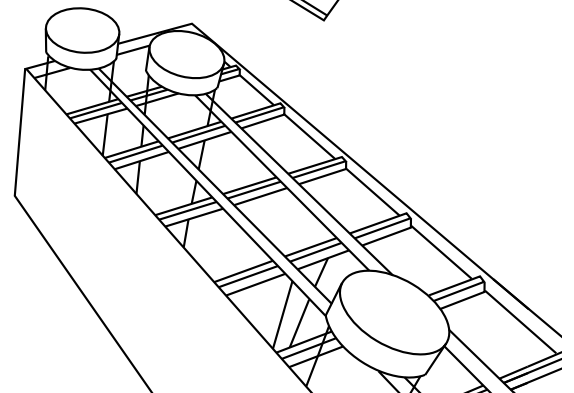
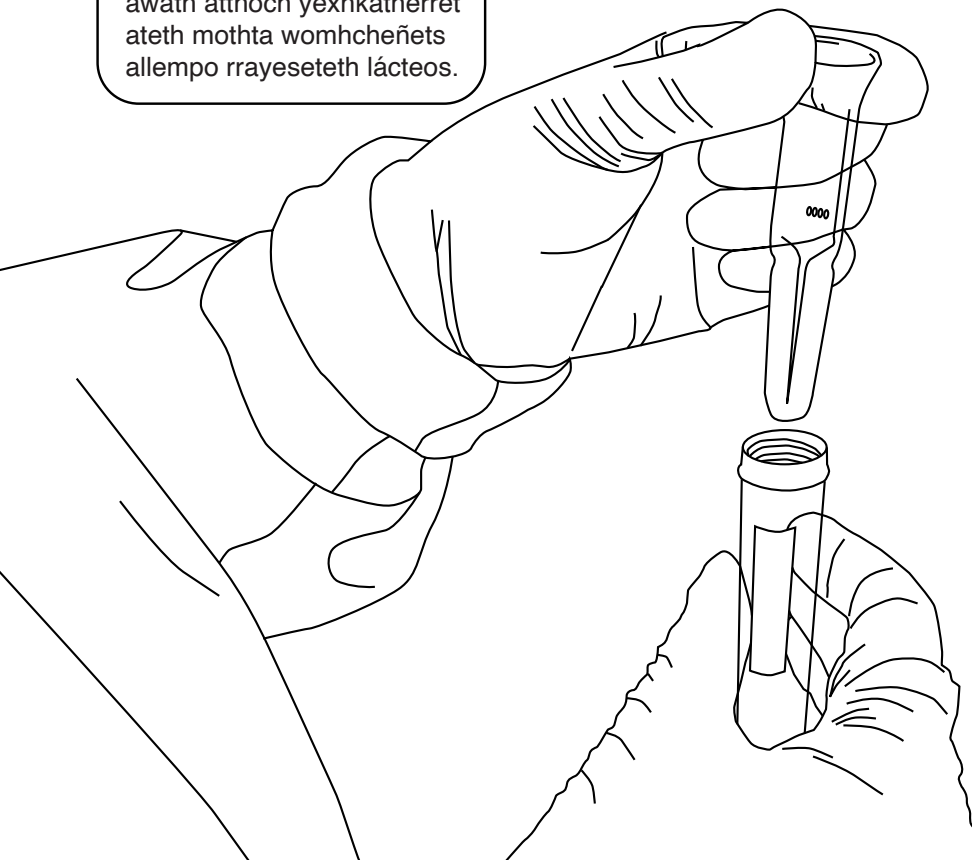
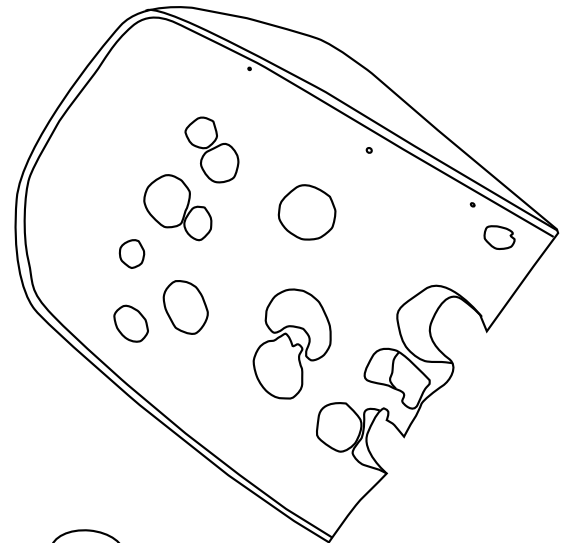
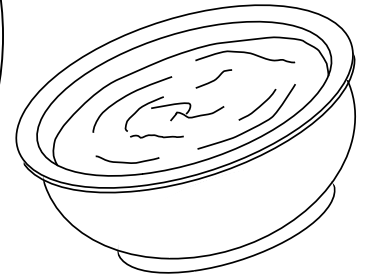
Añ wakshemath ñanem ayatet bisonte europeo (ñamha sochena uros), pátherr berr poetsathoth nanak atarr, thepa kollawerra. All anetso enterret allo ayatet berr nanak awath sochena península de Anatolia, the anets Turquía.



Modelo de proteína

Ateth orrterra rreñtsoxhno lácteos

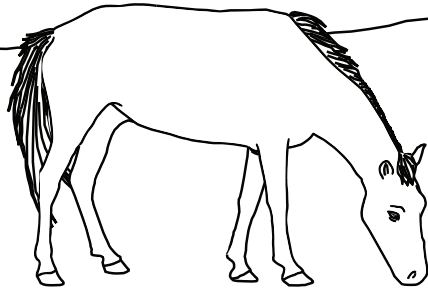
Ateth orrterra rreñtsoxhno lácteos amá tama achmetarethe, tarraña bioarqueólogonesha sherbhatenet pátherr técnica sochena espectrometría de masas atthoch entyaset proteínas momosatso ástotso awath atthoch yexhkatnerret ateth mothta womhcheñets allempo rrayeseteth lácteos.



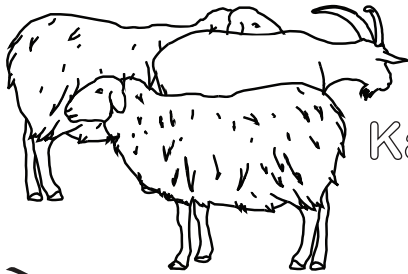
Mongolia

Shonte atsetara berroxhno yexhena all anets Mongolia, amat ñamha kawallexhno, wakshexhno, yakëxhno, kawraxhno, esháxhno, renoxhno ñamha kameyoxhno. Ayatañeshapa' yexhkatenet lácteos arrotheñ poemomos páthetets berroxhno ñeñth ayatenet.

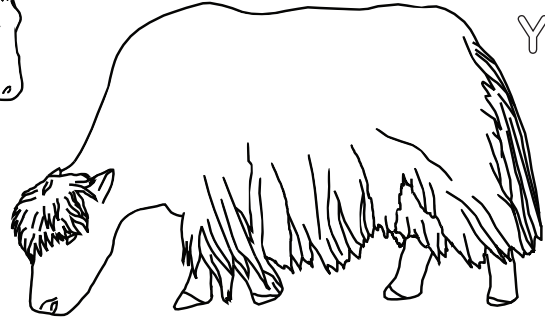
Kawall



Eshá

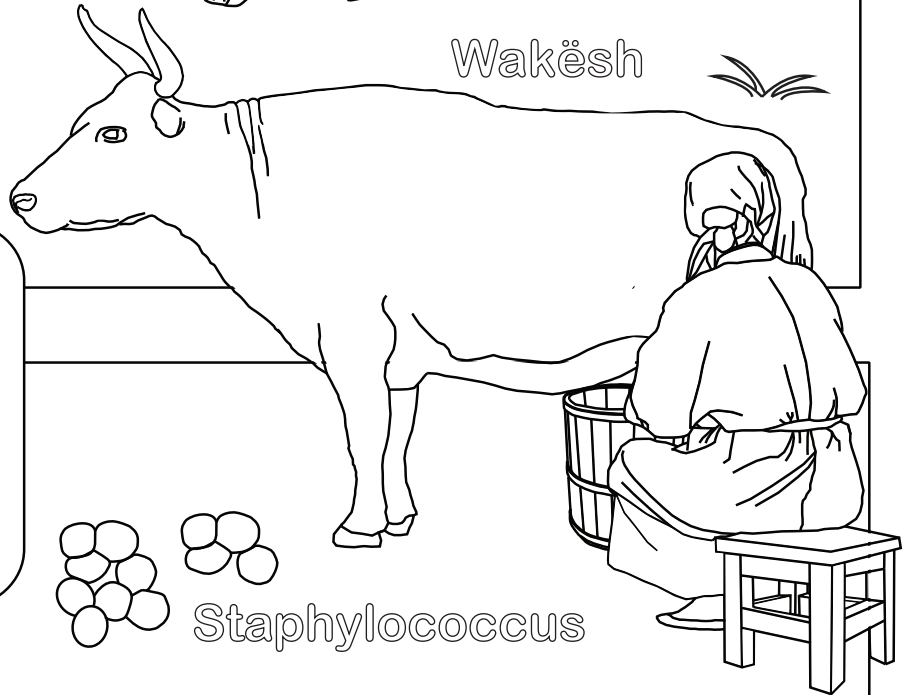


Kawra



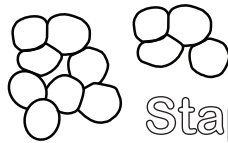
Yak

Wakësh

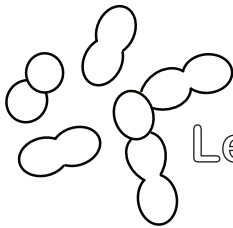


RREÑTSOXHNO LÁCTEOS

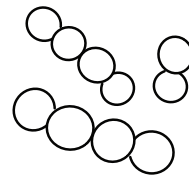
Rreñtsoxhno lácteospa' nanak sherben páthetets yeth all anets Mongolia. Arrotheñ thorreñets arqueológica yeñoteñ añ yexheñets arrotheñ (3 500) mapa' mella char awath.



Staphylococcus



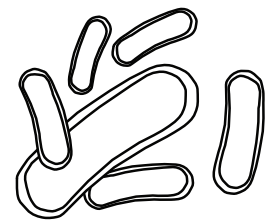
Leuconostoc



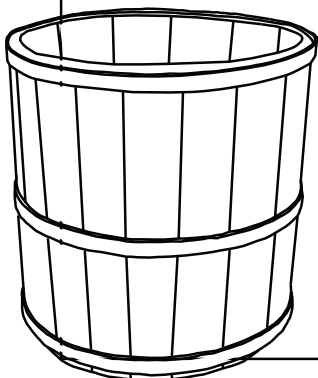
Lactococcus

Micoorganismos de los lácteos

Microorganismospa', ñeñth sochetsa bacteria ñamha levadura, nanak sherbenet atthoch yexhkayesa panamen rreñtsoxhno lácteos ñerram yogurt, mantequilla ñamha queso, ñamha po'potantañ amá tama achmetarethe ñerram aaruul (requesón porrarre) ñamha airag (po'cerveza poemomos kawall) all anets Mongolia.



Lactobacillus



am hlania...
...Secantare...
...Aut Acidia

color qui oculis...
...nec dimum...
...falsc est...
...sup johem...
...in utims...
...sugge...

ATSNAŦTSOXHNO NĒŦTH ORRTATSA AWATH

Poenpaxhno, asotsoxhno űamha ásoťnats añűotenet atthoch yeűoterr poewomhcheűa acheűenesha awath. Ateth űerram, DNA űamha proteinas űeűth añűotetsa asotnatso yenpoenan cientificonesha atthoch eűotet ateth yexhkanma gingivitis űamha caries dental.

...dentib; p...
...entes fin...



entes fin
...omni...
...sunt deu

...tes in medio...
...sedite opib;...
...omni denocoms...

Omne Bonum

Omne Bonumpa' añ pátherr keltkarmats latiűo del siglo XIV ateth poewomhcheűa europa medieval űeűthpa' arr añűoteűet Biblioteca Real Británica. Echyenan eűoteűets asotsokĕp atthoch yokwampes yewomhcheűa űamha yeparta atsűaűsoth all Edad Media.

...tes fm a?...
...allaz...
...in maxilla...

...pffoz in solio...
...mento fisci...

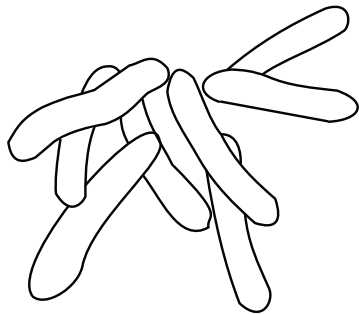
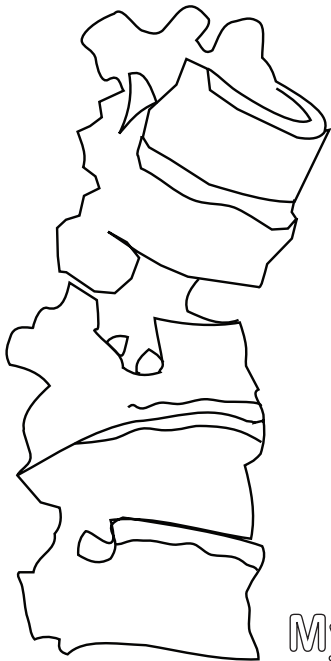


...quos priores...
...ad hangendu

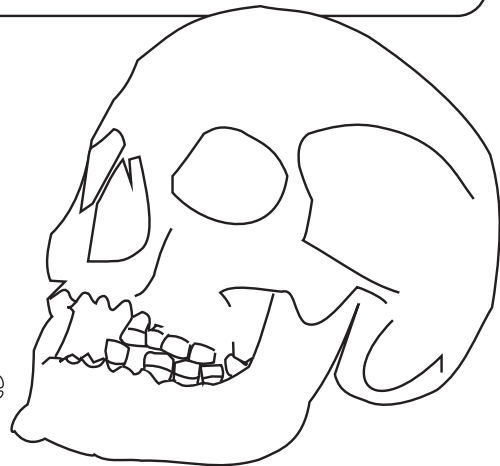
...tantis...
...a dulcora...

TUBERCULOSIS Y LEPROA

Tuberculosis ñamha leprapa' añ atснаñetspa' orrtáteñ bacteria *Mycobacterium tuberculosis* ñamha *Mycobacterium leprae*. Épomar atsnatáten yenpo ñamha DNA ñeñth a'poetsa yenpaxhno, aña' yenpoenan científiconesha atthoch yexhkatnerret ateth yexhkanma atснаñets awath.

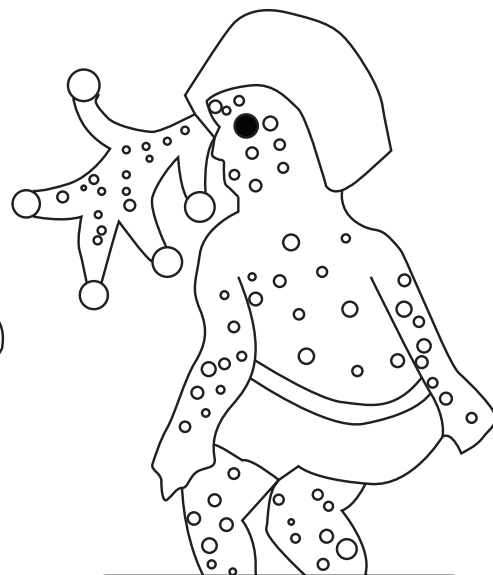


Mycobacterium leprae

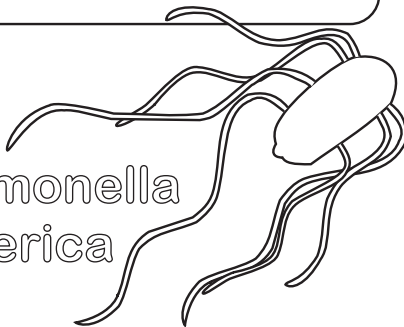


COCOLIZTLI

Pátherr atснаñets amá achmetarethe socheteth Cocoliztli aztecanesha, akllatan el 60% y el 90% pa'cheñer anets México awath allempo 1545 ñamha 1550. Añeñpopa' po'DNA ñeñth patógeno *Salmonella enterica* Paratiphya C enteret páso ñeñth acheñenesha rromanatats allempo.

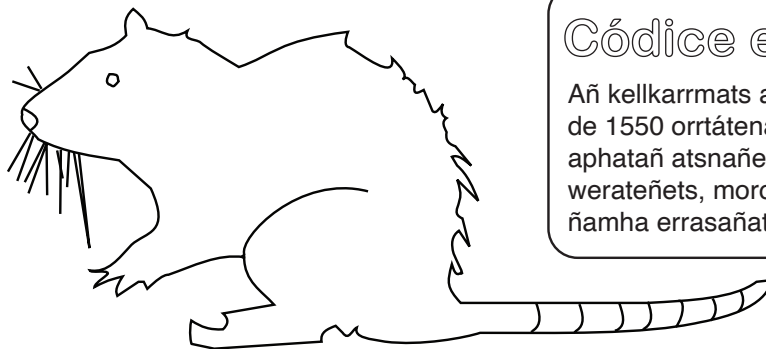


Salmonella enterica



Dr. Schnabel

Apartañesha ñeñth paretyese atснаñethare allempo orrta atснаñets en el siglo XVII añ sherbhatet máscaras ñerram poñ othexhno atthoch kowet poewomhcheña.

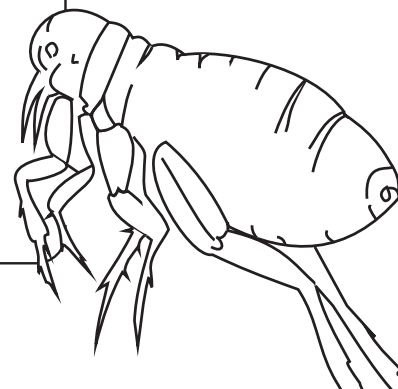


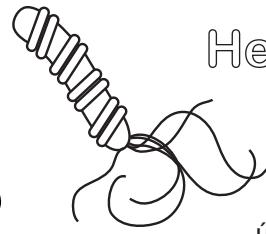
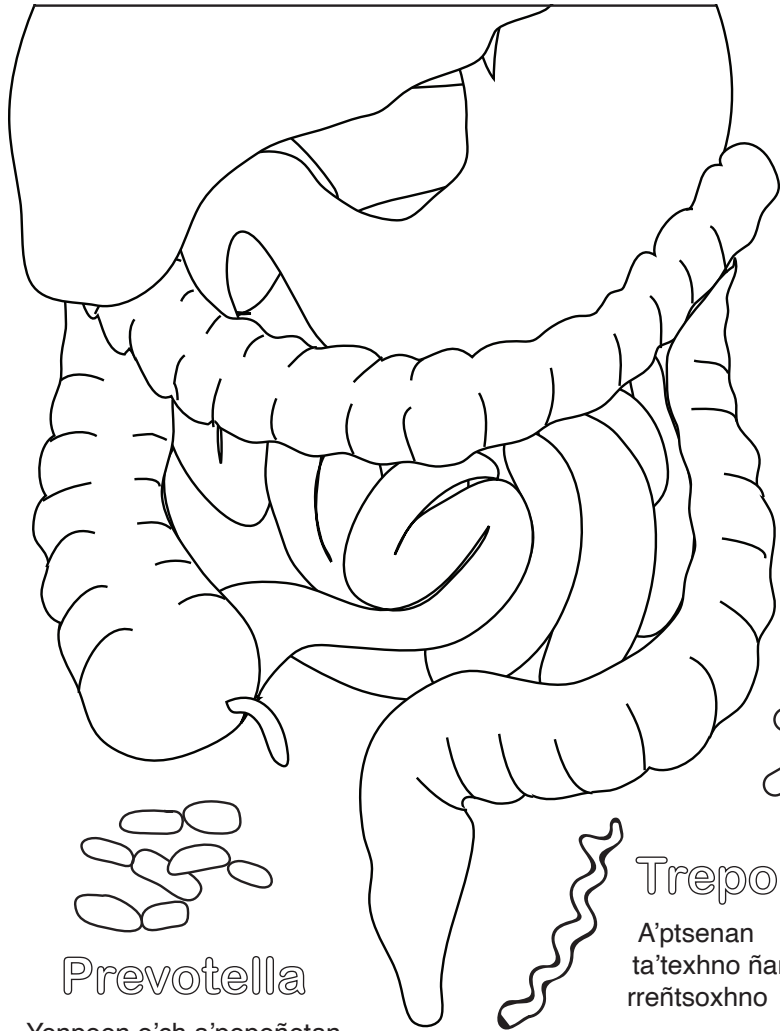
Códice en Cruz

Añ kellkarmats azteca de 1550 orrtátenan ateth aphaña atснаñets Cocoliztli: werateñets, moroksheteñets ñamha errasañats shonte.

PESTE

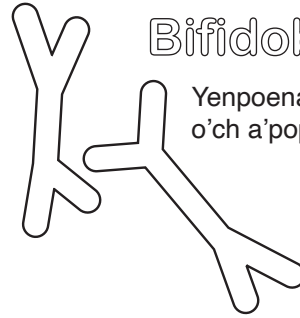
Pestepa' añ atsnatátets bacteria *Yersinia pestis*, añ orrtatene oththexhno ñeñth axhanatene chos. Ñeñth acheñenesha axhene añ oththexhno o'ch atsnatátanet peste bubónica. Añ peste akllatan ñeñth sochet Muerte Negra allempo (1346-1353) ñeñth akllate poeshmet achen anets Europa allempo charo.





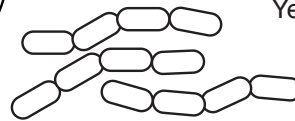
Helicobacter pylori

Yexhena yekotmo ñamha rremateythe úlceras ñamha cáncer



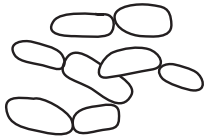
Bifidobacterium

Yenpoenan emathollnesha o'ch a'papoñetan momosats



Faecalibacterium

Yexhkatenan rreñets Añeköp células intestinales



Prevotella

Yenpoen o'ch a'papoñetan ta'texhno echarrare



Treponema

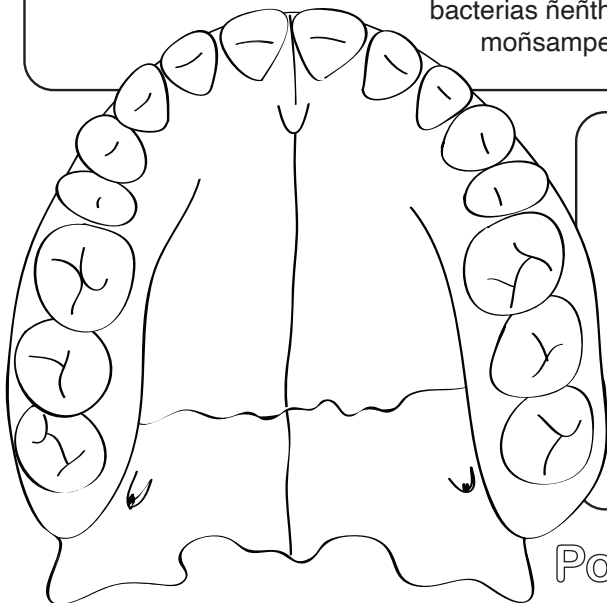
A'ptsenan ta'texhno ñamha rreñitsoxhno

MICROBIOMAS ANCESTRALES

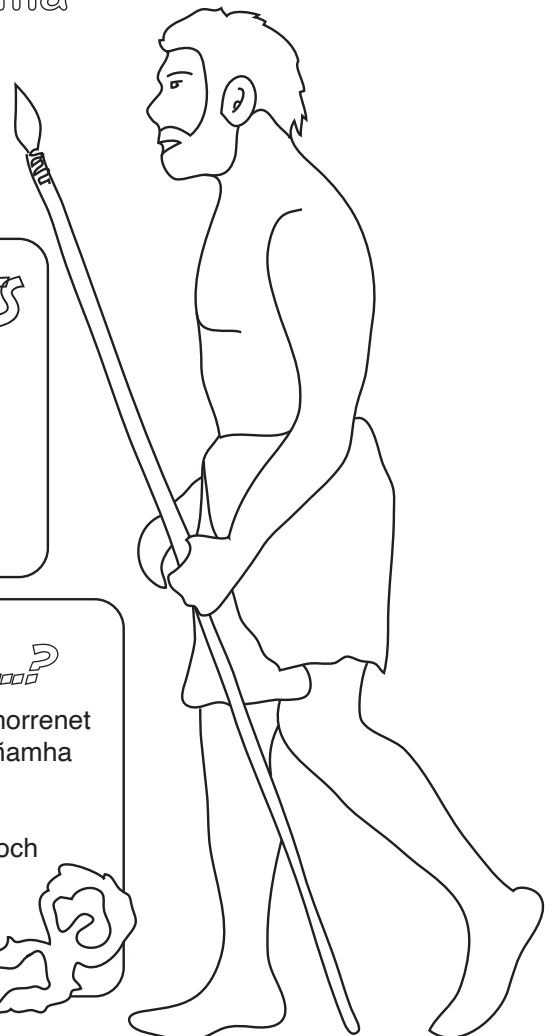
Pe'mokërpa' all yexhena trillones de células bacterianas, all apxhena ora yésocheñ microbioma. Ñeñth bacteria yexhetsa pe'mokro yenpoenep o'ch a'mlotstan perrar ñamha moñsampenpha. Ñeñth bacteria eñall pérrmo yenpoenep atthoch amá pesosyateno, añña bacterias ñeñth yexhetsa penamo moñsampenpha atsnañitsoth.

¿PEÑOTEÑET...?

Científiconeshapa' thorrenet cálculos asotsoköp ñamha paleoheces atthoch eñótet microbiomas awatheshañ eshkënoch eñoterret póttakma ñeñth orrtáte atsnañitsoxhno.



Porphyromonas

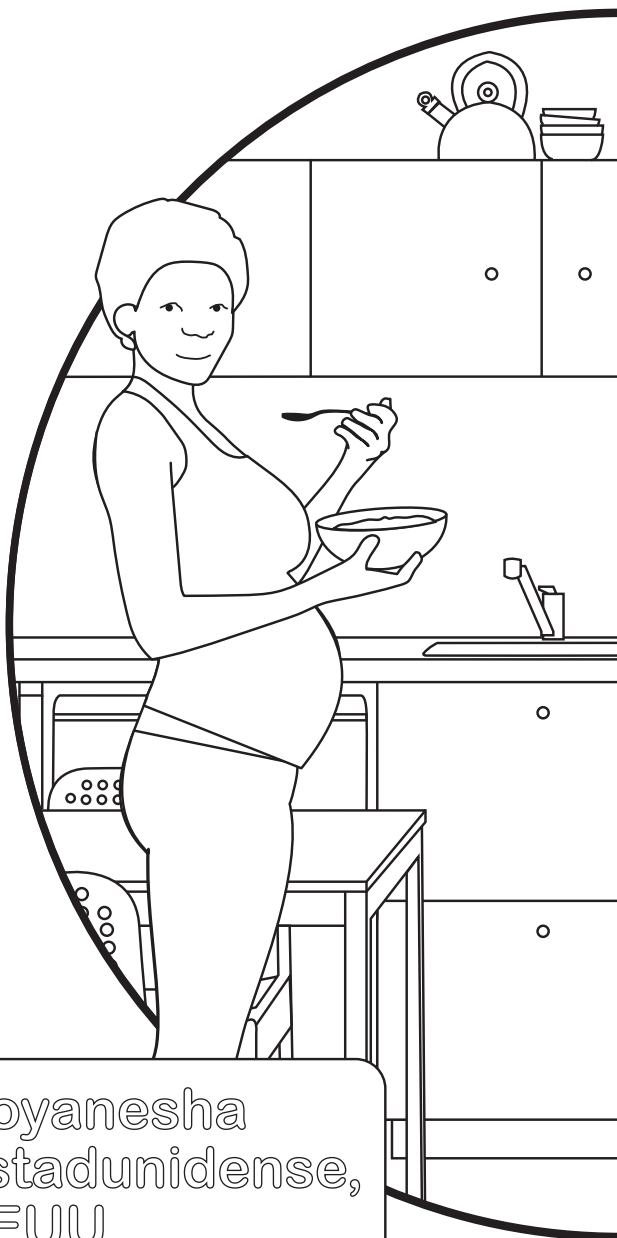


APXHATSETAÑNESHHA

Apxhatsetañneshapa', ñamha achmetareth poetsathnasnesha- apxhatsetañnesha, rrenet rreñtsoxhno poetsathomar ñeñthomar poerraretspa' tsetatsetena (páthetets arrorr) ora char.

Allempo ama mothterra naretatseteñets awath (10 000) xharra mella char, ora acheñeneshapa' xho apxhatseteteth.

Apxhatsetañnesha añeño échenet microbiomas intestinales nanak atsetara que acheñenesha industrializadas.



Koyanesha
estadunidense,
EEUU



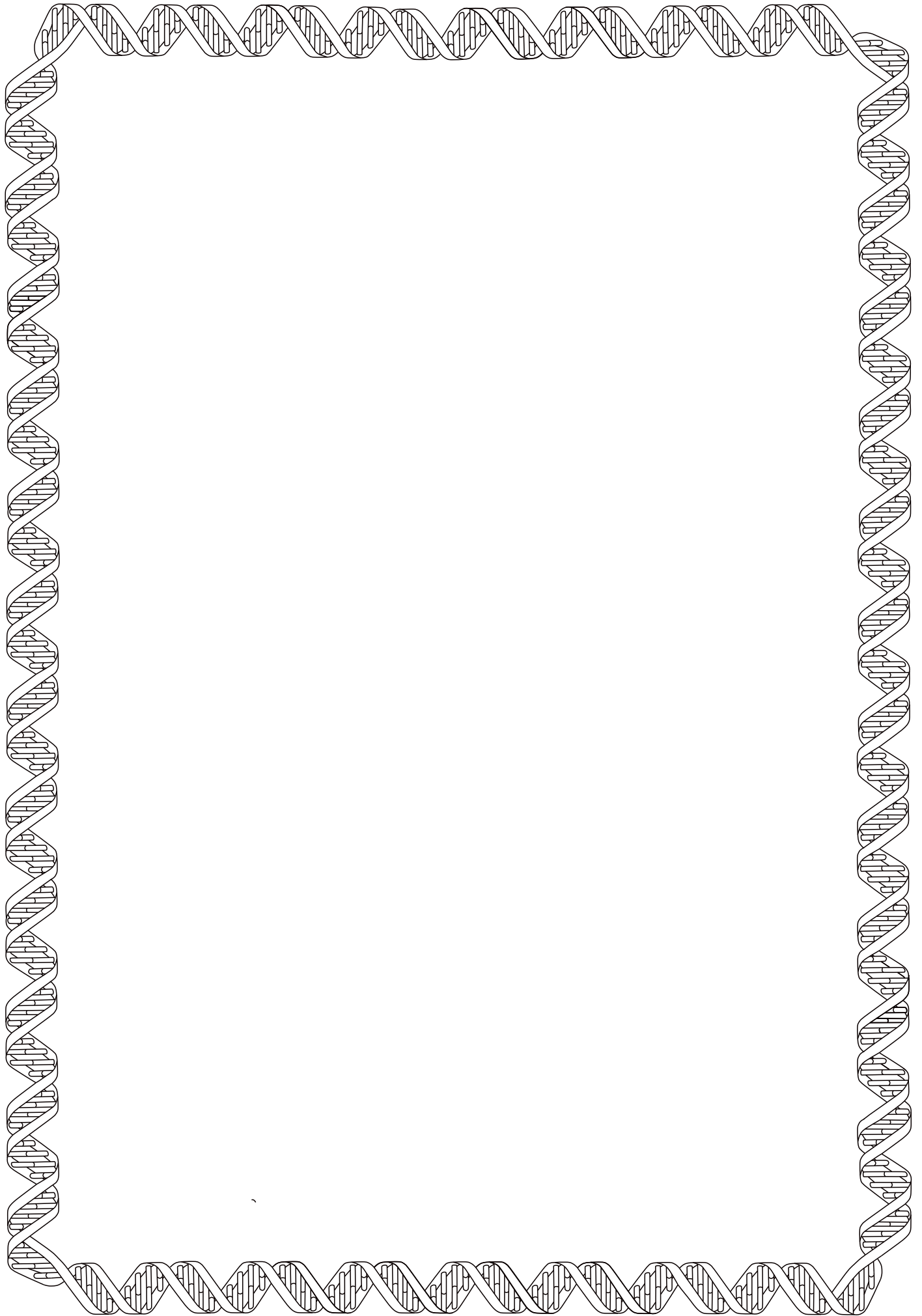
Koyanesha
ñamha ematholl
hadzas, de
Tanzania

ACHEÑENESHA INDUSTRIALIZADAS

Acheñenesha industrializadaspa' rrenet narmetsoxhno anaretareth attho a'metátenet rreñtsoxhno, añ pátherr tarwaseñets ñeñth koñetha acheñenesha etsotátene.

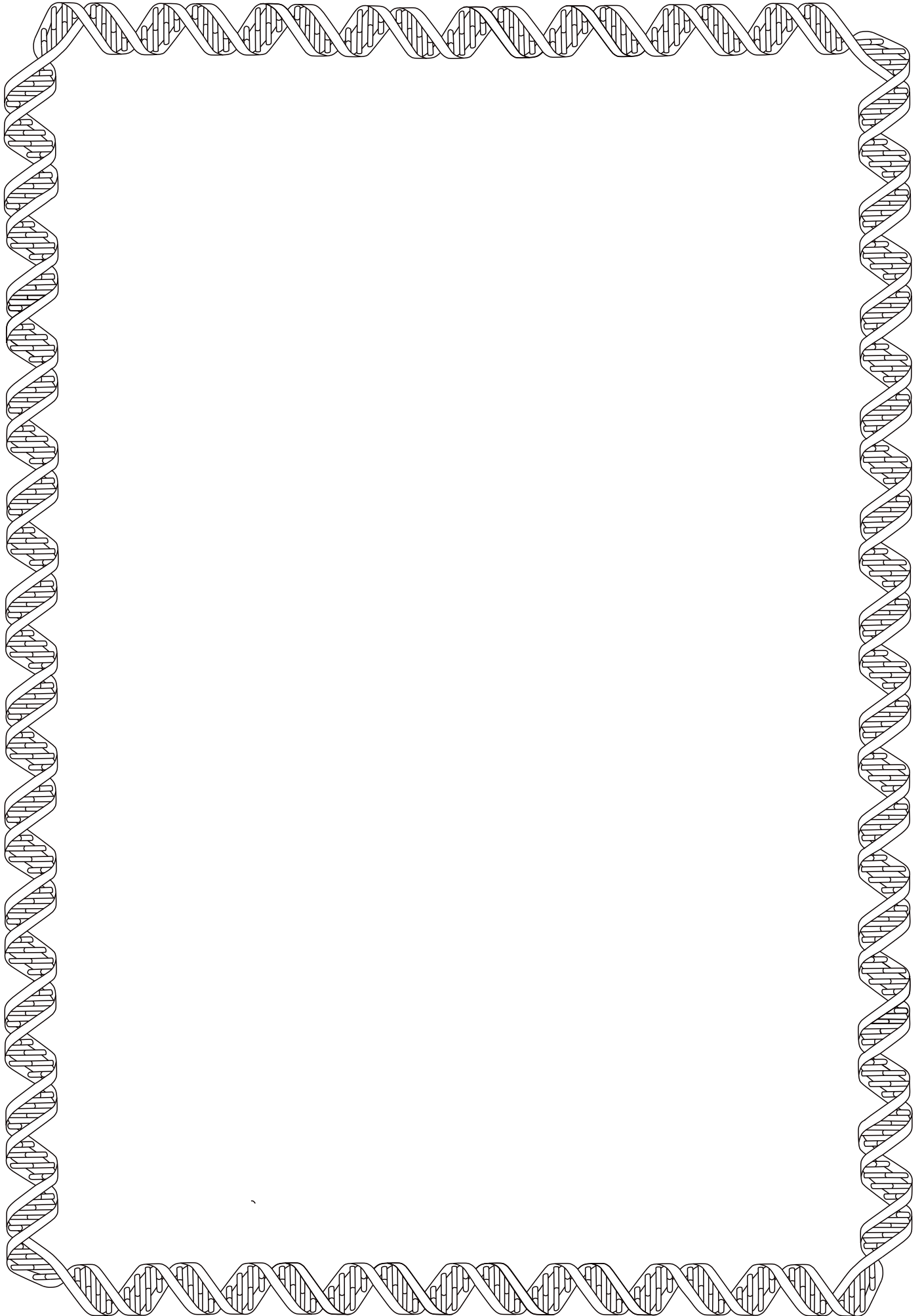
Mecanización, a'porrarreñets ñamha aññoteñets, nanak sherben all procesenet rreñtsoxhno, xhokmach aneñet bhaxhayo allcha thaya rrayeset.

Acheñenesha anetso industrializadas añeño echenet microbiomas atsetara koñeth, ñeñthomarña thepa' nanakcha atsnatenet inflamaciones crónicas.

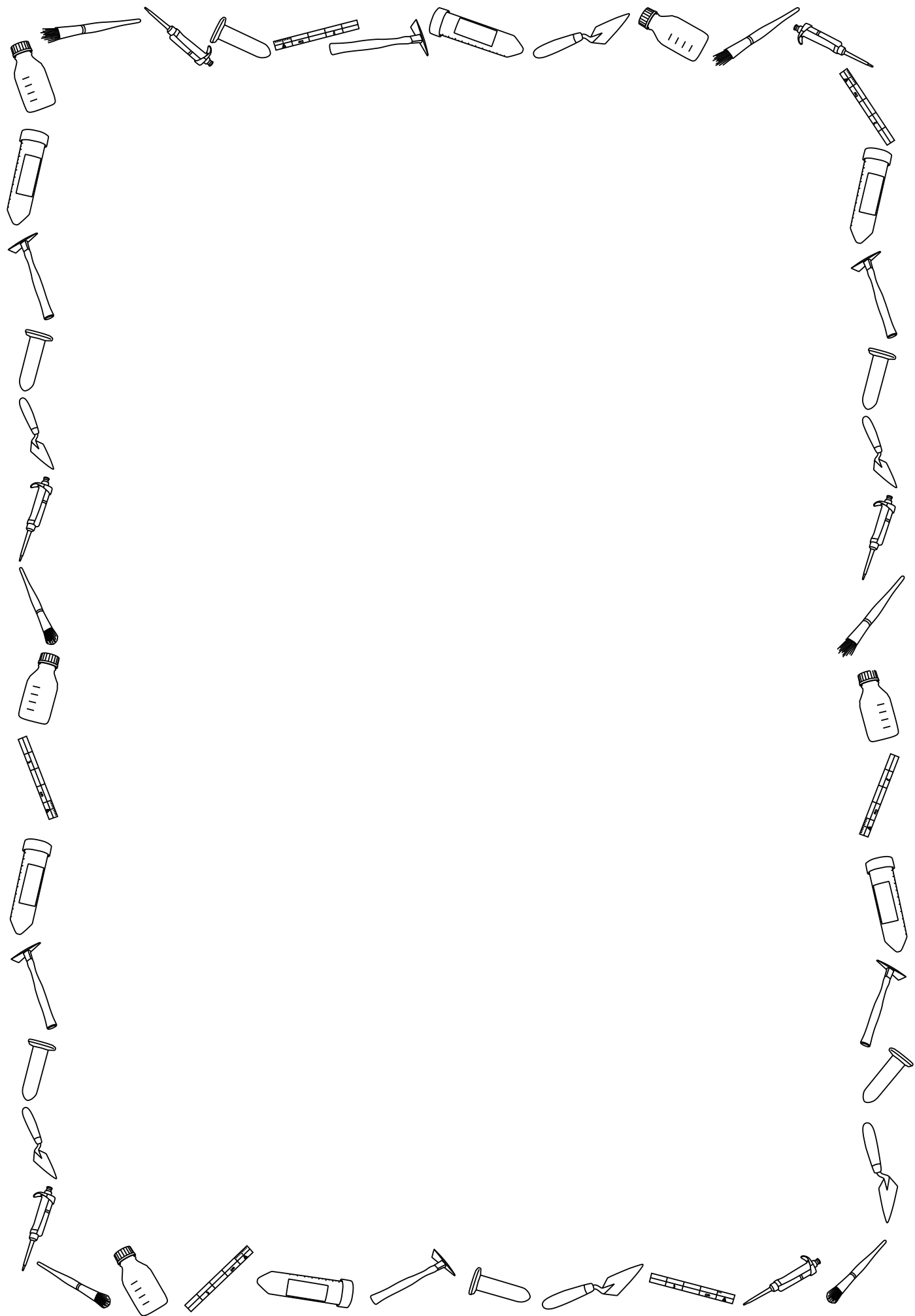




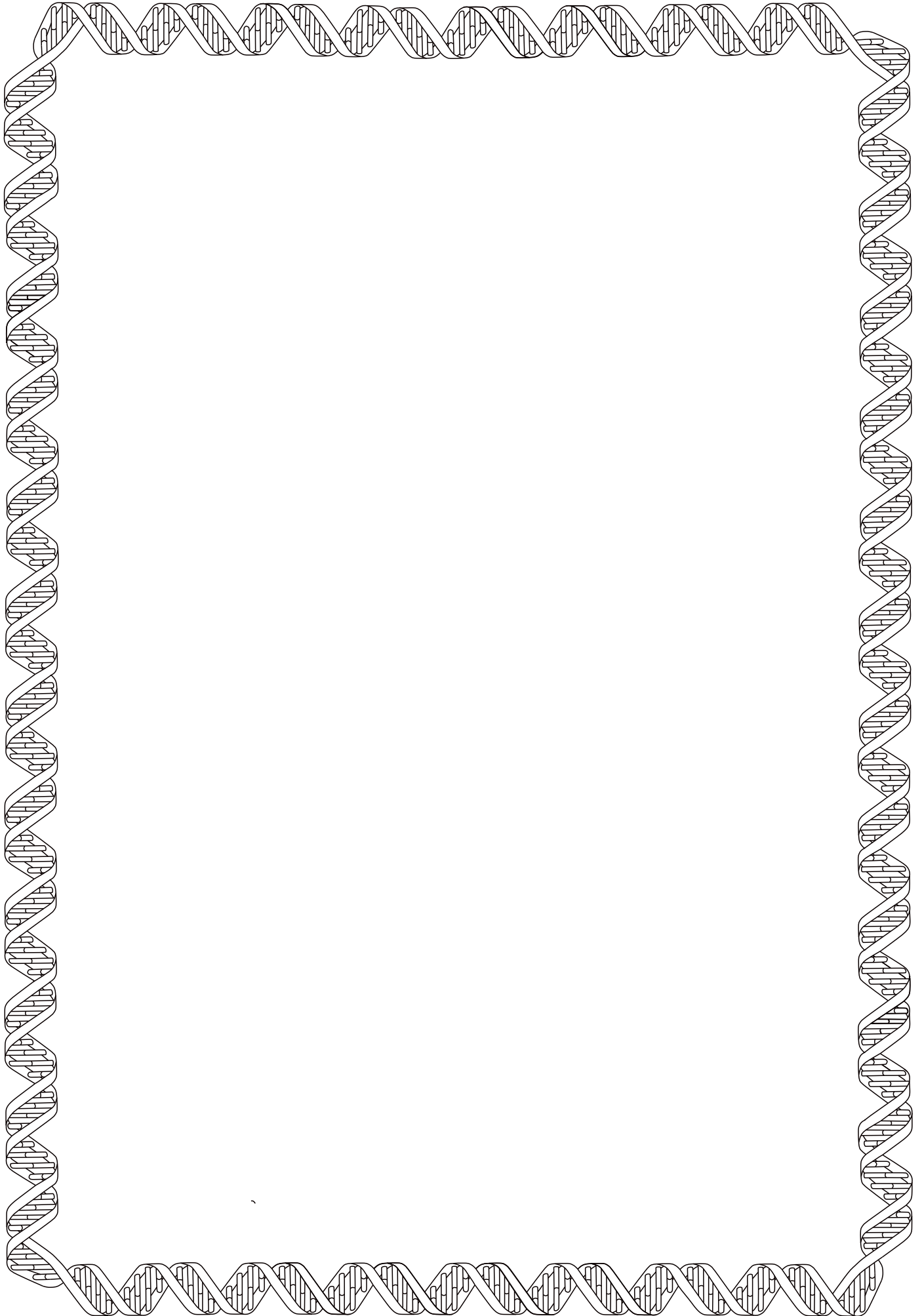






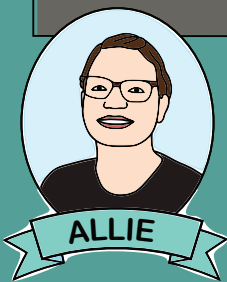




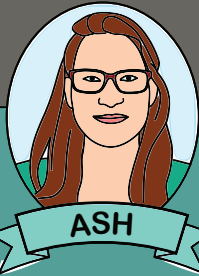




Instituto Max Planck de Antropología Evolutiva



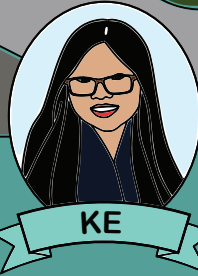
ALLIE



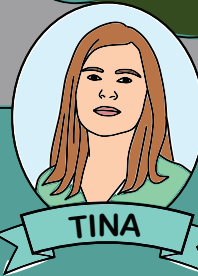
ASH



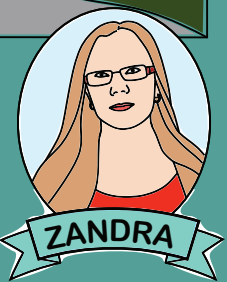
JESSIE



KE



TINA



ZANDRA

Wotayeñets

ARR CIENCIAS ARQUEOLÓGICAS Pátherr kellkarmats ya'yeñtsokëp

¡Peñot ateth arqueólogos ñamha bioarqueólogos tarwasenet allowenet atthoch anapoet apthoteñsoxhno ateth yexhayesnoma acheñenesha awath! Phokthanmoey o'ch yeñotnom ¿Éseshaythe? Ñamha ¿Ésot yeñotnen?, arrotheñ alloth orrterra acheñ arrowa la peste medieval. Peñot ateth wotayeñets awath ñamha ortáteñets por radiocarbono. Pechmet ateth científiconeshapa' yexhkatenet ateth rrayeseteth awath arrotheñ ñeñth poechayetsa ta'texhno microscópicos. Pemaret ateth awath ayatyeseteth ñamha la ciencia de productos lácteos. Phowtayes atsñañsoxhno ñamha epidemias awath ñamha pechmet microbioma ancestral humano.

Añ yexhkate científicos del Instituto Max Planck de Antropología Evolutiva.

Traducido al Yanesha por Didier Dennie Lopez Francis.



DIDIER