## Appendix II

## Words that are often confused

Most of these words cause difficulties for native English speakers; indeed, some of them are more likely to be problematic for native speakers than for Spanish speakers. Words that are often misinterpreted due to the influence of Spanish are listed in the next appendix, False friends.

## DEFINITION <br> EXAMPLE

## ABILITY, CAPACITY

Ability: power or competence to do something

Capacity: ability to contain or amount contained

The brain's plasticity gives it the ability to adapt after focal damage.
The combined capacity of the third and lateral ventricles is about 20 ml in normal adults.

## ABSORPTION, ADSORPTION

Absorption: incorporation of gas, liquid, light, heat, Some drugs interfere with calcium absorption. etc.
Adsorption: collection of gas, liquid, dissolved substance on a surface in a condensed layer

Adsorption by hemofiltration devices must be taken into account when dosing some drugs.

## ACCURACY, PRECISION

Accuracy: degree of closeness of a measurement to the true value
Precision: degree to which the correctness of quantity is expressed

This test always yields the correct results: its accuracy is $100 \%$. In well-reported results, the number of digits after the decimal point tells us the precision (but not the accuracy!) of the measurement.

## ADMINISTER, ADMINISTRATE

Administer: to deliver treatment

Administrate: to manage or direct the affairs of a business, institution, etc.

Administer the drug subcutaneously if intramuscular injection is contraindicated. The university administrates the laboratory's funding.

AFFECT, EFFECT

Affect: Normally a verb meaning to produce a change in; sometimes a noun meaning feeling or observed emotional response
Effect: Normally a noun meaning result or consequence; sometimes a verb meaning to bring about

Different types of antibiotics affect different types of bacteria in different ways.

The effects of antibiotics are both concentrationdependent and time-dependent.

## DEFINITION <br> EXAMPLE

## AFFECTION, AFFECTATION

Affection: fondness; rarely, disease Affectation: behavior, speech, or writing that is not Her British accent is an affectation. genuine and aims to impress

ALTERNATELY, ALTERNATIVELY

| Alternately: in an alternating sequence or position | The product was purified by alternately |
| :--- | :--- |
| centrifuging and re-suspending in ultrapure water. |  |
| Alternatively: as an alternative | We could use RT-PCR; alternatively, we could use |
|  | NASBA. |

## ALTHOUGH, WHILE

Although: in spite of the fact that

While: standard use expresses simultaneity of actions; when used to mean although, while can generate confusion

Although they rewrote the manuscript, it was rejected.
While they rewrote the manuscript, the authors suspected it would be rejected.
(In this case, while can be interpreted as both
time-related and whereas.)

AMONG, BETWEEN
Among: used for the relationships between one element and two or more others
Between: used for the relationship between two elements or between more than two elements considered individually

Lower respiratory tract infections are the leading cause of death among all infectious diseases. No differences in mortality were found between the experimental subjects and controls.

AMOUNT, CONCENTRATION, CONTENT, LEVEL
Amount: total quantity measured
The amount of cerebrospinal fluid drained from the experimental animals was lower than the amount drained from the controls.
Concentration: relative quantity of a substance in a There is a positive correlation between the plasma quantity of another substance concentration of $\beta$-lactam antibiotics and the response of bacterial infections.
Content: total quantity of a substance in a quantity The malignant liver lesions had higher fat content of another substance

Level: position on the vertical axis; position on a scale; sometimes used to mean amount, concentration, or content than the benign lesions. Retinol binding protein-4 circulating levels were higher in patients with nonalcoholic fatty liver disease.

AMOUNT, NUMBER
Amount: uncountable quantity
We recorded the amount of fluid drained in 24 h . Number: countable quantity We recorded the number of SNPs identified.

## EXAMPLE

ANESTHESIOLOGIST, ANESTHETIST,
ANAESTHETIST
Anesthesiologist: (US English) a physician specialized in anesthesiology
Anesthetist: (US English) a nurse, technician, or physician trained to administer anesthetics
Anaesthetist: (UK English) a physician specialized in anesthesiology

AS, LIKE
As: a conjunction, used before a clause with a subject and a verb
Like: a preposition, used before a noun
ASSURE, ENSURE, INSURE, REASSURE
Assure: to affirm something is right to reinforce belief
Ensure: to make sure

Insure: to contract insurance to cover possible losses
Reassure: to restore confidence

Like Smythe et al..$^{12}$, we also found...

They assured me that the reagent would arrive today.
Please ensure that the door to the laboratory is locked when you leave.
We need to insure this equipment against theft.

The negative results of the RT-PCR reassured the patient.

Anesthesiologists usually complete a four-year residency program after obtaining their MD or DO. The anesthetist asked the patient to count backward from one hundred.
The anaesthetist was responsible for perioperative care.

As Smythe et al. ${ }^{12}$ reported,...
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ATRIUM, ATRIAL, AURICLE, AURICULAR
The noun atrium (plural, atria) and the adjective atrial (adjective) usually refer to the upper chambers of the heart.
The noun auricle and the adjective auricular refer to the outer projecting part of the ear or to the earshaped appendage projecting from each atrium in the heart.

## BECAUSE, SINCE

Because: used to give the reason for something

Since: from a point of time in the past; also used to mean because, but this use can generate confusion

Atrial flutter is caused by a reentrant rhythm in either atrium.

The left auricle serves as a decompression chamber when left atrial pressure is high.

She needs to inject insulin because she has diabetes mellitus.
Since she was diagnosed with diabetes mellitus, she always carries sweets in her purse.
(In this case, since can be interpreted as both time-related and casual.)

BESIDE, BESIDES

Beside: next to

Besides: moreover, in addition to

The operating room is beside the emergency room.

Besides the residents, a staff physician is always present.

## DEFINITION

## EXAMPLE

## BOTH, THE TWO

Both: the two together Both groups improved after treatment. (In this case, the two would also be correct.)
The two: is used to differentiate between or to compare

No differences in age, sex, severity of disease, or comorbidities were found between the two groups. (In this case, both would be incorrect.)

## CAN, MAY

Can: to be able to; used for ability and general possibility
May: to be possible; used for possibility in a specific case

Breast cancer can affect men as well as women

In light of his symptoms and the results of the physical examination, this man may have breast cancer.

COMPETENCE, COMPETITION
Competence: having the necessary skill, knowledge, etc.
Competition: rivalry or contest for desired goal

We hired her because of her competence in statistical analysis.
The competition between the two research teams was fierce.

COMPRISE, COMPOSE, CONSIST OF, INCLUDE
Comprise: include (exhaustive), contain, consist of, The zygomycoses comprise a diverse group of or constitute; considered by many to be incorrect rare mycotic diseases.
in the passive voice

Compose: to make or form by combining things, parts, or elements; often used in the passive

Consist of: to be composed of

Include: nonexhaustive

These clusters are composed of paralogous genes, which are probably the products of local gene duplications.
Teratomas consist of cells from the three main tissue layers of an embryo.

Early warning signs of schizophrenia include social withdrawal; hostility or suspiciousness; oversleeping or insomnia; and inappropriate laughter or crying.

CONTINUAL, CONTINUOUS
Continual: occurring regularly or frequently

Continuous: nonstop
The patient's reflexes were continually monitored (a neurologist tested him every 3 hours). The pH in the perfusate was continuously monitored throughout the experiment.

## DISCREET, DISCRETE

Discreet: prudent Health is a private matter; medical professionals need to be discreet.

Genotypic data support the existence of six stable discrete typing units (DTU) in Trypanosoma cruzi.

## DEFINITION

## EXAMPLE

DOSE, DOSAGE
Dose: quantity of medicine taken at one time

Dosage: administration of medicine in doses; determining the quantity, frequency, and number of doses

DOUBLE, DUPLICATE
Double: twofold When asthma control deteriorates, clinicians may instruct patients to take a double dose of their inhaled corticosteroid medication for a short period.
Duplicate: an exact copy of
The maximum daily dose of acetaminophen is 4000 mg in adults.
He asked for information about the dosage of acetaminophen for children on CRRT. The region of mRNA that encodes the protein is a duplicate of the exon region of the DNA since the introns are removed from the mRNA.

DURING, FOR

During: preposition used before a noun; it does not tell us how long something took or lasted For: preposition used with a period to say how long something took or lasted

During my postdoctoral fellowship, I discovered an enzyme that...
I worked under Dr. Diamond for three years.

EAR TUBE, EAR CANAL, AUDITORY TUBE

Ear tube: tympanostomy tube

Ear canal: external auditory meatus
Auditory tube: Eustachian tube

An ear tube creates an airway that ventilates the middle ear and prevents the accumulation of fluids behind the eardrum.
Due to its relative exposure to the outside world, the ear canal is susceptible to diseases. The auditory tube links the nasopharynx to the middle ear.
e.g., i.e.
e.g.: abbreviation of the Latin term exempli gratia, which means "for example"
i.e.: abbreviation of the Latin term id est, which means "in other words"

Signs of overdose (e.g., slow heart beat, blue lips or fingertips, deep snoring or gurgling) require immediate action.
Hypoglycemia (i.e., fasting glucose $<4.0 \mathrm{mmol} / \mathrm{I}$ ) is a medical emergency.

Note: both abbreviations are mostly used within parentheses

EXCISE, RESECT

Excise: to remove (e.g., a tumor) by cutting

Resect: to remove part of an organ or structure

The tumor was excised, and the patient remained free of disease until death from unrelated causes 22 years later.
We resect the tissue that contains the cancer from the lungs.

## DEFINITION

EXAMPLE

## EXPERIENCE, EXPERIMENT

Experience: knowledge gained from what you have observed

Experiment: a test, trial, or tentative procedure aimed at discovering something unknown

Our experience shows that nosocomial infection rates can be improved through an educational program.
This experiment investigated whether immunostimulation with TLR-2 agonists under conditions of sterile inflammation affects the immune response and remote organ inflammation.

EXPOSITION, EXPOSURE, EXHIBITION

Exposition: expounding or explaining

Exposure: being exposed

Exhibition: displaying or showing

Her exposition of the role of reverse transcriptase in DNA sequencing was helpful.
Exposure to ionizing radiation during pregnancy can result in miscarriage or malformation. The authors of the best posters in the exhibition were invited to publish their work in the society's journal.

## EXTENSION, EXTENT

Extension: the act or state of extending
Extent: the degree to which something extends

The extension of disease through the bowel wall indicates a poor prognosis.
It is crucial to determine the extent of disease.

## FEWER, LESS

Fewer: less in number (used with countable nouns) Women reported fewer adverse effects than men. Less: less in amount (used with uncountable Less fluid formed in the pleural space of treated nouns) animals.

## FARTHER, FURTHER

Farther: to a greater distance

Further: additional
The experienced colonoscopist was able to reach much farther than the trainee. The trainee made further progress in the succeeding weeks.

## FROM, OF

These two prepositions have many, sometimes overlapping meanings. Read them in a good dictionary and pay attention to how they are used

Copying of an article = copying the entire article Copying from an article = copying parts of the article

GENDER, SEX
Gender: a social construct Masculine and feminine are gender categories.
Sex: a biological concept
Male and female are sex categories.

| DEFINITION | EXAMPLE |
| :--- | :--- |
| HEAR, LISTEN TO | I heard on the radio that a hospital in Barcelona <br> had made an exciting discovery. <br> Hear: perceive with the ears <br> I listen to the radio while I'm setting up my <br> experiments. |
| Listen to: direct the attention of the ears to |  |
| HUMAN, HUMANE | The Declaration of Helsinki outlines guidelines for <br> research on human subjects. |
| Human: related to people | The Office of Laboratory Animal Welfare <br> guarantees the humane treatment of animals used <br> for research. |
| and animals characterized by compassion for people |  |

## IF, WHETHER

If: introduces conditional (yes or no), cannot be used before infinitives or after prepositions Whether: (yes or no), can be used with infinitives and prepositions

Whether or not: in most cases, or not can be omitted. However, when we want to express the idea "both if or if not" we need to use whether or not.

We did not know if/whether the animals would survive.
We did not know whether the animals would die after the first dose or after the second dose (only two possibilities).
We did not know if the animals would die after the first or second dose (three possibilities - maybe the animals would not die).
We cannot decide whether to include the chief as an author.
I would like to talk about whether you should apply for the fellowship.
Call me if you can come to my talk in Salamanca. (Conditional.)
Call me whether or not you can come to my talk in Salamanca. (Both if and if not.)

INCIDENCE, PREVALENCE

Incidence: the number of new cases of a disease in a population in a specified period of time Prevalence: the total number of cases of a disease in a given population at a specific time

The incidence of AIDS in Spain is about 2.0 cases per 100,000 population per year.
The estimated prevalence of AIDS among adults in Spain is $0.4 \%$.

## DEFINITION

## EXAMPLE

INCREASE, AUGMENT, INCREMENT, ENHANCE, IMPROVE

Increase: to make or become greater

Augment: to make greater, especially by addition from the outside
Increment: to increase by discrete amount

Enhance: to increase a good quality

Improve: to make better

His systolic blood pressure increased from 100 mmHg to 120 mmHg .
We examined whether estrogen withdrawal augments parathyroid-induced IL-6 production. The dose was incremented by $1 \mathrm{mg} / \mathrm{kg}$ to reach a final dose of $12 \mathrm{mg} / \mathrm{kg}$ on the fourth day. All patients reported enhanced self-esteem after the sessions.
Cerebral blood flow improved after treatment.

## ILLEGIBLE, UNREADABLE

Illegible: impossible to read because of poor handwriting, faded print, etc.
Unreadable: impossible to read because of poor writing

The pharmacist had to phone the hospital because the prescription was illegible. Somebody has to supervise her reports: her last report was unreadable.

IMMUNIZE, INOCULATE, VACCINATE

Immunize: to render immune

Inoculate: to introduce serum, vaccine, or antigenic substance to increase immunity; to implant microorganisms or infectious material on a culture medium

Vaccinate: to inoculate with a vaccine (e.g., modified virus) as a preventive or sometimes curative measure

Young children are immunized to many diseases through natural contact with microbes. We inoculated 15 male Wistar rats with anthrax.

## INTERVAL, PERIOD

Interval: an intervening period of time
Period: an interval of time characterized by the
occurrence of a certain condition, event, or phenomenon

Animals' heart rate was measured at tenminute intervals for a period of 30 minutes after administration of verapamil.

## LOCATE, LOCALIZE

Locate: determine the location of Localize: confine

We located the foreign body in the ileum. We hypothesized we could decrease localized bleeding by using blended current at the end of the sphincterotomy.

## LOOK, SEE

Look at: direct the attention of the eyes to See: perceive with the eyes

We looked at the specimen under the microscope, but we couldn't see any abnormalities.

## DEFINITION <br> EXAMPLE

MADE FROM, MADE OF, MADE OUT OF
Made from: used when the material undergoes Wine is made from grapes.
an essential change so that it is no longer recognizable
Made of: used when the material is recognizable
Made out of: implies the transformation of an object

This heart valve is made of titanium.
Dr. McGyver made a tracheostomy tube out of a ballpoint pen.

MINIMAL, MINIMUM
MAXIMAL, MAXIMUM

Minimal, maximal: adjectives, although minimum and maximum are more common

Minimum and maximum: nouns and adjectives

Decide on the minimal (or minimum) number of samples you can use and the maximal (or maximum) number you are prepared to invest in. Our goal is to keep complications to a minimum.

MOLALITY, MOLARITY
Molality: number of moles of solute per kilogram of Solutions labeled with molal concentration are solvent denoted with a lower case m: a 1.0 m solution contains 1 mole of solute per kilogram of solvent.
Molarity: number of moles of solute per liter of solution Solutions labeled with the molar concentration are denoted with a capital M : a 1.0 M solution contains 1 mole of solute per liter of solution.

MUCOUS, MUCUS, MUCOSA

Mucous: adjective
Mucus: noun

The mucous membranes secrete mucus.
Mucus is a viscous mixture of mucins, water, electrolytes, epithelial cells, and leukocytes.
Grafts from the oral mucosa can be used to reconstruct the urethra.

MULTIVARIATE, MULTIVARIABLE
Multivariate: refers to a statistical analysis with multiple outcomes

Multivariable: refers to a statistical analysis with multiple predictors

Multivariate models are appropriate for data from longitudinal studies with an outcome measured for the same individual at multiple time points (repeated measures) or for nested/clustered data with multiple individuals in each cluster. A multivariable linear regression model has a continuous outcome and multiple continuous or categorical predictors.

They didn't notice the flaw in their experimental design.
When they realized their design was flawed, they understood why their results made no sense.

## DEFINITION

EXAMPLE
OPTIMAL, OPTIMUM
Optimal: adjective We sought to determine the optimal (or optimum) biologic dose of sirolimus prior to prostate surgery.
Optimum: noun and adjective They are not functioning at their optimum.

## ORTHOTOPIC, ORTHOTROPIC

Orthotopic: in the correct or normal position
In orthotopic heart transplantation, the patient's heart is always removed.
Orthotropic: showing growth in direct line with the Timely orthotropic procedures can often eliminate stimulus the need for orthodontic procedures.

OSCILLATE, RANGE, VARY

Oscillate: to swing back and forth at a regular speed
Range: to vary within certain limits

Vary: to change, to differ

Basal insulin level oscillates with a regular period of three to six minutes.
The normal range for red blood cells in women ranges from 4.2 to 5.4 million cells per microliter of blood.

Concentrations of enzymes involved in both phase I reactions vary significantly between individuals with normal hepatic function.

## PARAMETER, VARIABLE

Parameter: a potential variable to which a particular value can be assigned to determine the value of other variables

Parameters do not relate to actual measurements or attributes but to quantities defining a theoretical model.
Variable: values that vary from individual to individual

The dependent variable is often called the response variable.

## PATENT, PERMEABLE

Patent: unobstructed
After the angioplasty procedure, the stenosed artery was patent.
Permeable: with penetrable pores or interstices, etc.

The walls of capillaries are permeable to ions, water, nutrients, and even whole cells.

## PERCENT, PERCENTAGE, PERCENTILE

Percent: a fraction expressed as a number of hundredths
Percentage: a rate or proportion
Eighty-five percent of the patients were men.

A large percentage of patients developed complications.
Percentile: Any of the 100 equal parts into which the range of the values of a set of data can be His head circumference was in the 95th percentile for his age. divided to show their distribution

## DEFINITION

## EXAMPLE

PERIODIC, PERIODICAL
Periodic: recurring at intervals of time

Periodical: a journal issued at regularly recurring intervals

We investigated whether periodic intra-articular Ctp injections could delay disease progression in patients with osteoarthritis.
He spoke at the International Conference on Biomedical Periodicals.

PHOSPHORUS, PHOSPHOROUS
Phosphorus: noun Calcitonin helps control the levels of calcium and phosphorus in the blood.
Phosphorous: adjective
Phosphorous acid is an intermediate in the preparation of other phosphorus compounds.

PREDOMINATE, PREDOMINANT,
PREDOMINANTLY, PREDOMINATELY

Predominate: verb

Predominant: adjective

Predominantly or predominately: adverb

The 1b genotype, which predominates in Japan was the most widely distributed genotype and accounted for $58 \%$ of all isolates sequenced. The predominant vacA genotype was s1c/m1b (22/30, 73.3\%).
Lymphomas predominantly affect men in their second and third decades of life.

## PRINCIPLE, PRINCIPAL

Principle: a fundamental law from which others are derived

Principal: main

The principle that the simplest explanation for a phenomenon is the best one is called Occam's razor.
The principal contraindication for thorazine is depression.

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PROSTATE, PROSTRATE, PRONE, SUPINE,
RECUMBENT
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Prostate: gland surrounding neck of the bladder in male mammals
Prostrate: lying face down (strongly suggests submission)
Prone: lying face down

Supine: lying face up

Recumbent: reclining, lying

Enlargement of the prostate may interfere with urination.
The terrorist made everybody lie prostrate on the floor.

Stereotactic breast biopsy is usually done with the patient in the prone position.
To insert a central line in the internal jugular vein, place the patient in the supine position.
Patients who spend weeks or months in a recumbent position are likely to develop urinary tract problems.

## DEFINITION

## EXAMPLE

## REPRESENT, BE

Represent: to designate, stand for, denote

Be: to exist, to equal

In this box-and-whisker plot, the ends of the whiskers represent the minimum and maximum of all the data.
Methicilin is a narrow-spectrum beta-lactam antibiotic of the penicillin class.

REABSORPTION, RESORPTION
Reabsorption: reclaiming what is taken
Resorption: remodeling

REVIEW, REVISE
Review: to go over critically
Revise: to make changes to

In the intestine, PTH increases reabsorption of calcium and inhibits reabsorption of phosphate. PTH increases bone resorption of both calcium and phosphate.

We have revised our manuscript; we are grateful for this opportunity to have the referees review it again.

## SAFE (SAFETY), SECURE (SECURITY), SURE

Safe: not dangerous
Secure: preventing unwanted intrusion Sure: certain

## TEMPORAL, TEMPORARY, TRANSIENT,

 TRANSITORYTemporal: relating to or near the temples of the skull
Temporary: suggests an arrangement established with the idea of being changed soon
Transient: suggests something in the process of passing by
Transitory: suggests an innate characteristic by which a thing, by its very nature, lasts only a short time

The drug is safe.
The database is secure.
We are sure that the results are valid.

## THAT, WHICH

That: relative pronoun used only in defining clauses; cannot be used after a preposition Which: relative pronoun used in both defining and non-defining clauses

Temporal arteritis is inflammation and damage to blood vessels that supply the head.
After the disaster, the school was set up as a temporary hospital.
A transient ischemic attack usually lasts about 24 hours.
Transitory oxygen-glucose deprivation induced both apoptosis and necrosis in cerebellar granule cells.

The fellowship that was advertised in Molecular Genetics has been filled.
The experiment, which has never been repeated, yielded some interesting results.

EXAMPLE
VARIABILITY, VARIATION, VARIANCE
Variability: condition of being variable
Homologous recombination is a significant source of variability.
Variation: the act, process, or result of varying
We used custom-designed virulence arrays to try to understand the high genotypic variation in streptococci.
Variance: a statistical term referring to the spread of data from the mean

We compared normalization methods for high density oligonucleotide array data based on variance and bias.
Note: Variability and variation are often used interchangeably.

VARIOUS, VARYING

Various: different
Varying: changing

Various studies have found a strong association between the two variables. The widely varying results reflect methodological differences.

VISCID, VISCOUS, VISCUS
Viscid: adhering, glutinous

Viscous: sticky, with high viscosity

Viscus: an internal organ enclosed within a cavity

The slime layer forms when the amorphous viscid secretion from the bacteria diffuses into the surrounding media.
Viscous body fluid samples may result in sampling errors and samples with insufficient volume. The liver is the largest abdominal viscus.

Whereas: although

While: usually implies simultaneity, but can also be used to mean although (this figurative can lead to confusion in some cases)

Whereas Morton's neuroma is much more common in women, neurofibromas are equally distributed between the sexes.

The orderly restrained the patient while the resident injected the sedative. Blood pressure was recorded by the nurse while heart rate was automatically recorded. (In this case, whereas would be preferable unless the actions took place simultaneously.)

