

POKÉMON DNA IN SACRED PHOENIX

In Sacred Phoenix, the Pokémon's PID (Personal Internal Value) will be 256 bits.

The PID represents its DNA, which, as in reality, will be present in 2 copies in the Pokémon's genes (a total of 128 bits per copy).

The 256 bits are divided into 16 pairs of "chromosomes". When Pokémon breed, each one inherits one of each pair of chromosomes: one per parent.

The DNA serves as a checksum for the Pokémon's characteristics and will detect if it has been hacked.

List of chromosomes

Each chromosome works in pairs (principle of diploidy): a dominant chromosome (which determines the real characteristics of the Pokémon) and a recessive chromosome (which plays on its genetic diversity).

When two parents mate, except in specific cases or forcing by held items...

- Each parent transmits one of their two chromosomes for each gene (principle of meiosis).
- Each chromosome transmitted by a parent is randomly either dominant or recessive.
- The one that will become dominant (and thus be expressed) in the child will be randomly either the father's or the mother's. The other will be recessive and therefore dormant.
- If a mutation can occur, it will only occur on the chromosome that will become dominant in the offspring. (The chromosomes that will be recessive in the offspring will not undergo any mutation.)

Chromosome no. 1 - Pokémon lineage

10-bit size: 10 useful bits (1024 possibilities)

The lineage is different from the species. If the species matches the lineage, the Pokémon is not hacked on this criterion.

Bulbasaur, Ivysaur and Venusaur, for example, are from the same lineage and will therefore have the same chromosome.

This is the first criterion used to determine what will come out of an egg.

This chromosome never has a mutation.

The dominant chromosome will be that of the mother (or the Pokémon that played the role of mother). Mew or Ditto cannot transmit their species chromosome in the event of hybridization: its partner will always transmit its entire pair.

If the recessive chromosome is from a different lineage, the Pokémon is a hybrid and will therefore be infertile.

The recessive chromosome is just used to detect hybridization. It therefore does not intervene in the factor of genetic diversity.

Note: A Ghost Pokémon reincarnated into another lineage retains the dominant lineage chromosome it had when it was alive, but this becomes recessive, and the dominant chromosome is modified to match the spectral lineage. If reincarnation is done while remaining in the same lineage (Examples: Primeape => Annihilape, or Zorua => Hisuian Zorua), this pair of chromosomes remains unchanged.

Chromosome no. 2 - Pokémon's Form

11-bit size: 5 useful bits (32 possibilities) + 6 random bits (genetic diversity) which also become a payload for gene-dependent evolutions.

Some forms depend on the conditions

It is therefore necessary to differentiate between innate forms (such as the letters of Unown, Alolan or normal Ninetales, or Floette's flower color) and acquired forms (seasonal forms of Sawsbuck, Mega-Evolution, etc.).

The first impacts DNA, not the second. An argument about lineage data will therefore specify whether the shape is DNA-dependent or not.

Note: For the vast majority of Pokémons, forms are limited to 32 or less, hence 5 bits that are dedicated to this data. (Only Alcremie has 63 forms, but this is determined at its evolution and not at its birth).

The dominant chromosome will randomly be one of the chromosomes (dominant or recessive) of the father or mother if both parents are of the same lineage. (A normal Vulpix and an Alolan Vulpix that mate will therefore randomly give their offspring one of their two forms. If both parents are of the same form but one of them is heterozygous, it will be about a one in 4 chance of seeing the second form appear).

During transmission, the chromosome that will be dominant will have a low chance of mutating on its first part (1 in 8) if the breeding site can force a regional form different from its parents. The mutation will be in line with the region where the egg was laid. For example, breeding 2 homozygous normal Persians in a tropical location will give a 1 in 8 chance of spawning a tropical Meowth, while it will be a 1 in 8 chance of being a nordic Meowth in the temperate or cold regions of Keltios.

The last 6 bits are involved in genetic diversity (difference established if at least 1 bit differs) and are used for certain evolutions (e.g. Wurmple transforming into Silcoon or Cascoon, or Dunsparce which evolves into Dudunsparce double or triple form). As a result, the roll is made on 64 (binary power of 6) and not on 100.

In this part, mutations are very rare during fertilization (1 in 16 chance).

Giving a Everstone to a parent makes it possible to force the transmission of its dominant form chromosome and without mutation. This chromosome will of course be dominant in children.

... Except if the "father" holds this item during a hybrid mating, because in this situation, it is always the mother who transmits her two form chromosomes. (Otherwise, it could give surprises on the form of the Pokémon to be born!)

Chromosome no. 3 - Innate nature

11-bit size: 11 bits in total (2048 possibilities), payload at modulo 25 (i.e. 81 or 82 combinations for genetic diversity)

This chromosome has a good mutation rate (1 in 3 chance of having an altered bit for the chromosome that will be dominant in the child).

Thus, a baby has:

- 1 in 6 chance of inheriting the same nature as the mother (dominant gene from the mother transmitted without mutation to the child and remaining dominant in the child).
- 1 in 6 chance of inheriting the same nature as its father (dominant gene of the father transmitted without mutation to the child and remaining dominant in it).
- 1 in 6 chance of inheriting the recessive nature of its mother without mutation.
- 1 in 6 chance of inheriting the recessive nature of its father without mutation.
- 1 in 3 chance with the same distribution (a quarter for each) as the 4 previous cases, but with the gene transmitted in dominance that has mutated. The index offsets of nature will be 1, 2, 4, 8, 16, 7, 14, 3, 6, 12 or 24 depending on which bit has mutated.

Since a bit can mutate, genetic diversity is established when at least 2 bits of that chromosome differ.

If a parent holds the Everstone, its dominant chromosome by nature will be passed on as a dominant chromosome and without mutation to its offspring. If both parents hold one at the same time, their dominant chromosomes are both passed on, and the dominant chromosome in the child will be randomly chosen from the two.

Note: a consequence of this division is that the last two natures of the database are very slightly less common than the others (81 chances out of 2048 instead of 82 chances out of 2048).

If the nature of the Pokémon does not match this chromosome, it is because it is hacked.

Note that the game differentiates the innate nature from the battle nature. The battle nature can be changed to alter the stats, but it doesn't impact the Pokémon's personality (especially its taste preferences).

Chromosome no. 4 - Ability

8-bit size: 8 bits in total (256 possibilities), 5 significant, 3 non-significant (genetic diversity)

In Sacred Phoenix...

- The ability #1 has 128/256 chance of being expressed (value between 0 and 127)
- The ability #2 has 120/256 chance of being expressed (value between 128 and 247)
- The hidden ability has 8/256 chance of being expressed (value between 248 and 255)

It depends on the value of this chromosome.

This chromosome has a 1 in 4 chance of mutating in 1 of the 5 bits of the payload. Genetic diversity is therefore established if at least 2 of the first 5 bits differ or if the last 3 are not all identical. Another consequence is that this offers a (slight) chance that a hidden ability will appear in the offspring of parents without a hidden ability.

Conversely, if one parent has a hidden ability, this increases the probability that the offspring will have one as well. (And even more so if both parents do.)

If the Pokémon has only a single ability, its ability will be that ability, regardless of the value of that chromosome.

If the Pokémon has only one primary ability, its ability will be this one, regardless of whether the value is between 0 and 127 or between 128 and 247.

If the Pokémon doesn't have a hidden ability, it will have ability #2 if the value is between 248 and 255.

If the Pokémon has an ability that does not match its species and this chromosome, this means it has been hacked.

Chromosome no. 5 - Shininess

8-bit size: 6 useful bits (64 possibilities) + 2 random bits (genetic diversity)

If a Pokémon is shiny lock, the first bit will always be 0.

If a Pokémon is shiny forced, the 6 useful bits will necessarily be at 1 (and its 6 IVs at least 12).

There are a total of 24 bits that determine whether a Pokémon is shiny:

- The 6 bits in this chromosome (1 in 64 chance)
- 18 bits for stats (3 per stat): a Pokémon is eligible if the most significant bit is set to 1 or if the next two bits are both set to 1 (inclusive “or”) for each stat. (Approximately a 6% probability, or 1 in 16.77).

This results in a 1 in 1,074 chance under full odds. In fact, the shiny trait is a recessive trait dependent on this chromosome as well as the 6 IV chromosomes.

Upon fertilization, the payload has an average chance of mutating (1 bit is randomly altered, with a 1-in-4 chance that the chromosome will be passed on as dominant).

Despite the risk of mutation, a single different bit is sufficient to establish genetic diversity for that gene.

In case of Shiny Charm owned, the 6 significant bits and the IVs have the right to a second roll if the first roll is not shiny.

Note: IVs provide a strong control to increase the chances of obtaining a shiny, especially through breeding (since IVs are displayed in plain text, this immediately gives the player an indication that the Pokémon has 6 “good” genes out of the 7 required).

Pokémon with forced IVs will also have a significantly higher chance of shininess; 3 average to perfect IVs increase the odds to 1 in 262 (the case of Legendaries and Alphas), while 6 average to perfect IVs increase them to 1 in 64 (the case of the Starter, Nobles, and certain Mythical Pokémon).

One of the major consequences of the shiny trait being determined by inherited genes is that it greatly increases the chances of it being passed on. (Two Shiny parents will have at least a 3

in 8 chance of passing on a shiny chromosome that expresses this trait; the final result will depend on whether the right IVs have also been passed on.)

If the Pokémon is shiny even though its genetic combination is incompatible, it has been hacked.

Chromosome no. 6 to 11 - IVs

6×8-bit size: 5 useful bits, 3 random bits (genetic diversity) per IV

The three high-weight bits for each IV also play a role in determining the shiny! (6×3 bits in total.) The 6 IVs must be at least 12 for a Pokémon to be shiny (about 6% probability in full random).

When they are recessive in a parent, but become dominant in the child, these chromosomes have a high mutation rate (1 in 2 chance of having one altered bit on the payload).

A dominant IV gene passed on to a child never mutates during passing. This means that, on average, a child inherits 3 of the 6 IVs from its parents (1 chance in 2 for each of the 6 stats, independent draws for each).

Since a bit can mutate, genetic diversity is established only if 2 of the 5 bits differ, or if the 3 random bits have at least 1 difference.

In the case of a “Power” item carried by a parent, that parent will definitely pass on the IV gene associated with that item as the dominant chromosome.

If one of the two parents carries the Destiny Knot item, it will force the transmission of the dominant genes of 4 different IVs from the parents to their offspring. The other two stats will follow the standard random procedure, which is a 1 in 2 chance that a dominant gene from one of the two parents will remain dominant in the child. (That’s an average of 5 out of 6 inherited IVs.)

Finally, hybridization with a different lineage forces the transmission of the best IV genes for each stat, but at the cost of sterility in the hybrid offspring.

If the Pokémon has IVs that don’t match its IV genes, it’s being hacked.

Chromosome no. 12 - Sex chromosome

8-bit size: 0 to 3 useful bits (1, 2, 4 or 8 possibilities) + 5 to 8 random bits (genetic diversity)

In Sacred Phoenix, the vast majority of Pokémons have a 50/50 sex ratio. A few rare cases have 87.5% females, such as Combee.

It is the only chromosome whose “payload” is generated completely randomly during mating. Only the non-random part, inherited from both parents, is used to detect genetic diversity.

He also works on Spinda spots (which for a technical constraint will be limited to 16 combinations: 8 male variants and 8 female variants).

If the Pokémon belongs to a hermaphrodite lineage, this chromosome is ignored. The same applies to genderless lineages.

The 5, 6, 7 or 8 bits of low weight are taken into account in the diversity according to the sex ratio of the species: 8 bits for a hermaphrodite or genderless species, 7 bits for a 50/50 ratio or

in lineages distinguished from species consisting solely of males or females, 6 bits for a 25/75 or 75/25 ratio, and 5 bits for a 12.5/87.5 or 87.5/12.5 ratio.

If a binary Pokémon has a gender that does not match its chromosome, it is being hacked.

Chromosome no. 13 and no. 14 - Height chromosomes

2×6-bit size: 12-bit random (genetic diversity)

The sum of these two chromosomes influences the Pokémon's size in parallel with its current level and its natural IVs in Attack, Special Attack, and Special Defense.

A high Attack and Special Attack increase the size of the Pokémon. (+1 point per IV).

High Special Defense reduces the size of the Pokémon. (-1 point per IV).

(See the **Size and Weight** section for exact formulas.)

If a mutation occurs on this chromosome, it is only in steps of 1 or 2, and only on dominant chromosomes with a 1 in 2 chance each time.

Since it can mutate by +/- 2, genetic diversity is established when the value difference between the dominant and recessive chromosomes is at least 3 (leaving about a 1 in 16 chance that two randomly generated chromosomes will be considered identical).

Chromosome no. 15 and 16 - Weight chromosomes

2×6-bit size: 12-bit random (genetic diversity)

Same philosophy as with size chromosomes, except that the sum of these two determines the Pokémon's natural weight, in addition to its level and natural IVs in HP, Defense, and Speed.

High HP and Defense increase the Pokémon's mass (+1 point per IV).

High Speed greatly reduces a Pokémon's mass (-2 points per IV).

Note that weight is also influenced by height. (A large Pokémon will naturally be heavier, and a small Pokémon lighter, in proportion to the difference in size from the standard size.)

(See the **Size and Weight** section for exact formulas.)

Breeding fertility

Natural fertility of a Pokémon

Each Pokémon has a natural fertility rate that depends on its genetic diversity reflected in its PID.

This is done by comparing the dominant and recessive versions of chromosome pairs no. 2 through 16. If a pair is too similar (no or only one bit of divergence depending on the gene), the Pokémon is considered inbred on that gene, which reduces its ability to reproduce.

Identical chromosomes	Natural occurrence	Natural fertility	Level of inbreeding	Colored petals on the UI
0	59,67%	100% - Perfect	-	8/8
1	31,69%	87.5% - Excellent	-	7/8
2	7,48%	75% - Very good	-	6/8
3	1,05%	50% - Good	Minor	5/8
4	0,1 %	25% - Average	Medium	4/8
5	0,006%	12.5% - Low	Serious	3/8
6	< 0.0001%	6.25% - Very Low	Major	2/8
7	Negligible	3.125% - Almost null	Critical	1/8
8 to 15	Negligible	0% - Null	Total	0/8

On the IU, a Celtic flower with 8 petals indicates the level of fertility, in the manner of *Temtem*. The more petals that are discolored, the less fertile the specimen will be.

The flower will be of a different shape if the specimen is part of an infertile Egg Group.

Probability of obtaining an egg

Basic fertility (random draw every 256 steps): 75%

Possessed Oval Charm: Fertility $\times 1.5$

The compatibility of the two mating Pokémon is multiplied by their natural fertility to determine the probability of an egg.

Mated Pokémons	Examples	Compatibility factor
Presence of a juvenile in the pair (Evolutionary stage 1/3, stage 1/2 considered as baby, stage 2/3 of a non-imago insect, or level less than 15)	Pichu + Pikachu Nidoran ♂ + Nidoran ♀ Metapod + Butterfree Volbeat level 14 + Illumise level 15	$\times 0$ (Infertile)
Presence of a Pokémon from the Undead (automatic if Ghost-type), Hybrid, or Divine Egg groups	Gengar Basculegion MissingNo. Arceus	$\times 0$ (Infertile)
Identical sex (except hermaphrodite) or presence of a genderless species in the couple	Ho-Oh + Pidgeot ♀ Raichu ♂ + Raichu ♂ Meowth ♀ + Persian ♀	$\times 0$ (Infertile)

Incompatible lineages, or mating between two members of the Universal group	Wailord ♂ (fish) + Skitty ♀ (feline) Mew ♀ + Mew ♀ (Universal) Mew ♀ + Ditto ♀ (Universal)	×0 (Infertile)
Same lineage and evolutionary stage (and all level 15 or higher)	Raichu ♂ + Raichu ♀ Nidoking ♂ + Nidoqueen ♀ (stage 3/3) Flareon ♂ + Vaporeon ♀ (stage 2/2) Volbeat ♂ + Illumise ♀ Basic Vulpix ♂ + Alolan Vulpix ♀	×1 (Optimal)
Same lineage, but different evolutionary stage	Pikachu ♂ + Raichu ♀ Eevee ♂ + Vaporeon ♀ Floette ♀ + Florges ♀	×0.75 (Good)
Mating with a member of the Universal Egg Group (the offspring will be fertile and from the partner's lineage)	Mew ♀ + Jumpluff ♀ Mew ♀ + Manaphy ♀ Ditto ♀ + Tauros ♂ Ditto ♀ + Luxray ♀	×0.375 (Low)
Different lines, but compatible (leads to hybridized offspring, therefore infertile, but favors the best genes. The lineage is inherited from the mother or parent who played this role.	Luxray ♂ + Persian ♀ (feline) Arcanine ♂ + Houndoom ♀ (canid) Venusaur ♀ + Jumpluff ♀ (floral) Tentacruel ♂ + Manaphy ♀ (mollusk) Paras ♀ + Breloom ♀ (vegetal)	×0.375 (Low)

The final fertility phase said by the person in charge of the Day Care will depend on the deposited couple:

Probability of laying an egg every 256 steps	Quote
≥ 75% (excellent)	They seem to be living true love!
50 to 75% (good)	They seem to like each other very well.
25 to 50% (average)	They seem to like each other.
6.25% to 25% (low)	But they seem to like each other only timidly.
1.5625% to 6.25% (very low)	But they have trouble getting together. Their fertility is low.
< 1.5625% (infertile)	But they tend to play with other Pokémon rather than each other.

Note that the game will consider the pair as totally infertile if the probability of laying eggs is less than 1/64 (1.5625%).

The original Trainer or the nationality of the Pokémon does not affect the couple's fertility.

Finally, unlike Temtem, there is no drop in the fertility of the parents after each egg laid, but the loss of genetic diversity will be inevitable from the second generation if the offspring are crossed with their parents or siblings. Indeed, inbreeding generates less fertile offspring (represented by greyed petals on the fertility flower in the IU) and eggs that are at risk of aborting before their term.

About the Egg Group

In Sacred Phoenix, each Pokémon is assigned a unique Egg Group, and this Egg Group is common to its entire lineage, even for different forms. (The Egg Group is a lineage data and not a species data.)

That said, a specimen may end up in one of four infertile Egg Groups if a specific condition is met:

- **Divine Egg Group** for all Legendaries and Mythicals, with the notable exception of Manaphy and Mew. This group of divine blood is represented by a gold flower with Arceus crystals in the UI indicating fertility.

- **Hybrid Egg Group** if the creature is hacked or the result of a cross of two different lines. Paradox Pokémons, MissingNo, and Ultra Beasts are considered hybridized. Represented by a Frankenstein flower in the UI.

- **Undead Egg Group** if the species has the Ghost-type. For example, the Typhlosion lineage is part of the Mammalian group, but a Quilava that evolves into the Hisui Typhlosion falls into the Undead group due to its Ghost-type. Represented by a desiccated or skeletal flower in the IU.

- **Juvenile Egg Group** if the specimen is below level 15, or part of an evolutionary stage considered a “baby Pokémon” (not pubescent). Represented by an unhatched bud in the IU.

These four groups have in common that they are sterile and cannot reproduce.

Incubation stage and condition of the Egg

Unlike official games which rely solely on the number of remaining cycles to display the egg’s status, Sacred Phoenix also takes into account the total incubation time.

For example, a Magikarp egg (5 cycles) won’t automatically be in the “*This Egg will hatch soon!*” stage when it has just been laid.

Additionally, the number of stages before hatching depends on the total incubation time: 3 for early-hatching eggs, and up to 5 for slow-incubating eggs.

Fast incubation (5 to 15 cycles)

The remaining cycles are for a total of 5, 10 and 15 cycles respectively.

Remaining cycles	Status displayed
2 / 3 / 4	Sounds can be heard coming from inside! This Egg will hatch soon!
4 / 6 / 8	The embryo appears to move occasionally. It may be close to hatching.
-	This Egg has just begun incubating, but it will hatch quickly.

Medium incubation (20 to 30 cycles)

The remaining cycles are for a total of 20, 25 and 30 cycles respectively.

Remaining cycles	Status displayed
4 / 5 / 6	Sounds can be heard coming from inside! This Egg will hatch soon!
8 / 10 / 12	The embryo appears to move occasionally. It may be close to hatching.
12 / 16 / 20	The embryo has begun to develop. Just a little more time before it hatches!
-	What Pokémon will hatch from this Egg? It doesn’t seem close to hatching.

Long incubation (35 to 75 cycles)

The remaining cycles are for a total of 35, 40, 45 to 55 and 60 to 75 cycles respectively.

Remaining cycles	Status displayed
6 / 7 / 8 / 9	Sounds can be heard coming from inside! This Egg will hatch soon!
12 / 14 / 16 / 18	The embryo appears to move occasionally. It may be close to hatching.
20 / 24 / 28 / 36	The embryo is developing; it is halfway to hatching.
28 / 32 / 36 / 48	The embryo has begun to develop, but doesn't seem close to hatching.
-	It looks as though this Egg will take a long time yet to hatch.

Very long incubation (80 to 120 cycles) – Legendary and Mythical eggs

The remaining cycles are for a total of 80 to 95 cycles and 100 cycles and +, respectively.

Remaining cycles	Status displayed
10 / 15	The divine Egg is making noise: the Legendary is about to be reborn!
20 / 30	The divine embryo appears to move occasionally. It should hatch soon.
40 / 60	The divine embryo is developing; it is halfway to hatching.
60 / 90	The divine embryo has begun to develop, but will take time to hatch.
-	This Egg of divine blood will take a long time yet to hatch.

Inbreeding and Aborted Egg

When the egg is generated and its genetic code calculated (inherited by half from each parent), the dominant and recessive alleles of the unborn Pokémon are compared to determine the hatching odds.

If the egg has a serious or higher inbreeding rate, it will begin its first incubation stage with the message “*This Egg shows signs of inbreeding: successful incubation is not guaranteed.*”

Depending on the number of chromosomes considered to be identical, at each hatching cycle, the embryo may “lose” 5 HP from its starting HP. Knowing that an unborn Pokémon has between 11 and 15 HP, if this occurs 3 times during incubation, the embryo dies.

The probability depends on the number of cycles. A random draw is conducted each cycle, except when the stage “*Sounds can be heard coming from inside! This Egg will hatch soon!*” is reached.

Cycles		Chance of embryo degradation per cycle depending on the level of inbreeding (Percentage that the embryo aborts during the entire incubation period)				
Totals	Drawn at random	Minor inbreeding	Medium inbreeding	Serious inbreeding	Major inbreeding	Critical inbreeding or >
5	3	1/2 (12.5%)	7/10 (34.3%)	7/8 (66.992%)	13/14 (80.066%)	31/32 (90.915 %)
10	7	2/11 (11.823%)	2/7 (32.077%)	2/5 (58.010%)	1/2 (77.344%)	3/5 (90.374 %)
15	11	1/9 (11.465%)	1/6 (27.322%)	1/4 (54.480%)	1/3 (76.589%)	2/5 (88.108 %)

20	16	1/14 (10.151%)	1/9 (25.948%)	1/6 (51.321%)	3/13 (75.053%)	3/11 (85.375 %)
25	20	1/18 (9.653%)	1/12 (22.992%)	1/8 (46.469%)	3/17 (71.158%)	5/23 (84.240 %)
30	24	1/22 (9.344 %)	1/15 (21.289 %)	1/10 (43.573%)	1/7 (68.672 %)	3/17 (82.183 %)
35	29	1/27 (9.092 %)	1/20 (17.512 %)	1/13 (38.791 %)	1/9 (63.964%)	1/7 (80.420 %)
40+	33+	1/32 (8.318 %)	1/24 (15.723 %)	1/16 (34.070 %)	1/11 (58.752%)	1/8 (79.887 %)

- If the egg has had 2 bad draws, hatching cycles will become 2 times slower and the message “*The embryo is visible but moves very little. Inbreeding disrupts its development.*” will be displayed on the status of the egg.

- If the egg accumulates 3 bad draws (HP at zero), the embryo is dead and the egg turns into a “Bad Egg”.

- If the egg reaches the last stage of development “*Sounds can be heard coming from inside! This Egg will hatch soon!*”, the embryo is definitively saved and it resumes its nominal incubation rate until it hatches.

Note that Legendary Eggs are immune to abortion: being of divine blood, the genes tend towards perfection. This is evidenced by their 3 guaranteed perfect IVs (and even 6 for some, like Arceus or Mew)!

The effect of hybridization on gene transmission

With a partner from the Universal Egg group (Mew or Ditto)

- The parent who is not part of the Universal group systematically transmits its two chromosomes of species and form. This helps maintain the fertility of the offspring and ensure that the eggs laid are always from that parent’s lineage.

- The recessive chromosome of the form of the second partner has a one in 2 chance of becoming the dominant chromosome on its offspring, and the one transmitted as dominant retains the usual probabilities of mutation.

- The two aforementioned occurrences will never occur if this partner is wearing a Everstone, while this item will have no effect if it is worn by the universal partner.

- All other chromosomes are transmitted according to the principle of meiosis (one chromosome from each parent chosen at random), with the usual chances of mutation and forced transmission if a compatible item is carried by one of the two partners.

- A hybridized mother remains infertile, even with a partner of this Egg Group (meaning her two species chromosomes must necessarily be identical for the mating to be successful).

- The transmission of “Egg moves” is impossible, since it is inherited from the father.

With a partner from the same group Egg, but from a different lineage

- For each of the 6 IVs, the best gene will be systematically passed on dominantly to the offspring from the four chromosomes of both parents (with priority given to a dominant

chromosome in the event of a tie). That said, the risk of mutation remains present if the best IV gene transmitted was a recessive chromosome of one of the two parents.

- If one of the parents has a gene expressing the hidden ability, but the egg laid has not inherited this gene in dominance, a reroll on the transmission of this gene will be done to give the hidden ability a better chance to appear.

- If the parent acting as the “father” has attacks in his moveset that are compatible with the newborn, the newborn will know those moves from birth. This is the equivalent of Egg Moves in Sacred Phoenix, and it is automatically determined by comparing the father’s moveset with the newborn’s complete movepool (innate + acquired).

- The mother will pass on her species chromosome in a dominant manner to her offspring, while the father’s will be passed on in a recessive manner. This will result in heterozygosity on the species chromosomes, causing the offspring to be sterile.

- Even if it has 3 or 6 perfect IVs, this Pokémon will not be considered an Alpha or Noble (its half-blood deprives it of these titles and will not be considered dominant by its peers).

This gives hybridization a utility in Sacred Phoenix: even though the ability to cross two different lineages is only possible once, hybridization brings out the best possible genetics and can allow rare moves to be passed on without the need to sacrifice a Mirror Herb.

Manaphy’s case

Manaphy can breed with a partner from the Universal group or from the same group as it due to being a hermaphrodite from the Mollusk Egg Group.

- If it breeds with Mew or Ditto, its offspring will give Phiones.

- If it reproduces with another mollusk, its offspring will give Phiones if it played the role of the “mother”, and the species of the partner line if it played the role of “father”. It depends on the sex of your partner by following the usual rules in case of the presence of a hermaphrodite in a couple:

- Systematically Phiones if his partner is male.
- Systematically eggs from the line of its partner if it is a female.
- Randomly eggs from the line of its partner or Phione if Manaphy is mated to another hermaphrodite (common sex among mollusks).

Note that in Sacred Phoenix, Phiones can reproduce among themselves, being hermaphrodite mollusks from the Manaphy lineage, unless they are the result of hybridization with another non-universal lineage.

Furthermore, Phione is not considered a Legendary or a Mythical, as they exist in their hundreds in the wild. It’s best to think of this marine lineage as a swarm of insects, with Manaphy as the “queen” (Manaphy being unique, therefore Mythical).

In other cases (mating of two partners of the same lineage)

- Situation where fertility is optimal, with fertile offspring (except inbreeding).

- The transmission of “Egg moves” is limited: it is only done by comparing the father’s moveset with the newborn’s innate movepool, and is limited to 2 moves, prioritizing the later ones. Nevertheless, it can allow the newborn to experience an attack well before the required level.

Size and weight

Innate predispositions

The predisposed size of a Pokémon is determined by:

- Its innate Attack IV: the higher it is, the larger the Pokémon will be (1 point per IV)
- Its innate Special Attack IV: the higher it is, the larger the Pokémon will be (1 point per IV)
- Its innate Special Defense IV: The lower it is, the larger the Pokémon will be (0 points for 31 IVs, 31 points for 0 IVs)

- Its dominant chromosomes 13 and 14 (6 bits = max value of 63 per chromosome)

These 5 values are added together, then 13 is subtracted from this sum without going below 0, resulting in a value between 0 and 206. This sum of 5 random numbers yields a near-Gaussian distribution with a theoretical mean of 96.5 (but closer to 100 when accounting for Alpha Pokémons and IVs which are more often higher than the average due to natural selection.)

Legendary, Alpha, and Noble impact

If a Pokémon is “Alpha” (determined by having at least 3 perfect innate IVs – excluding Legendaries and hybrids), the Pokémon gains a +88 bonus in size, up to a maximum of 255.

If a Pokémon is “Noble” (determined by having 6 perfect innate IVs – excluding Legendaries and hybrids), it has a +128 bonus to its size score, up to a maximum of 255. (It also counterbalances the mandatory +0 points generated by the Special Defense IV).

The innate height factor is finally equal to $0.6 + \text{Innate Value}/250$ and will therefore range from 1.112 to 1.62 for Nobles; from 0.952 to 1.62 for Alphas; and from 0.6 to 1.424 for all other Pokémons.

Sacred Phoenix does not go overboard by giving Alphas and Nobles an exaggeratedly large size, as in *Legends Arceus* or *Legends ZA*. That said, they are the only ones that can reach the maximum factor of 1.62 and thus the XXXL size.

Legendaries, who by their very nature are all Alphas if not Nobles, do not receive this bonus so as not to create a discrepancy with the Pokédex data.

The predisposed weight of a Pokémon is determined by:

- Its innate HP IV: The higher it is, the heavier the Pokémon will be (1 point per IV)
- Its innate Defense IV: The higher it is, the heavier the Pokémon will be (1 point per IV)
- Its innate Speed IV $\times 2$: the lower it is, the heavier the Pokémon will be (0 points for 31 IVs, 62 points for 0 IVs)

- Its dominant chromosomes 15 and 16 (6 bits = max value of 63 per chromosome)

These 5 values are added together, then 25 is subtracted from this sum, bringing it back to a range between 0 and 200 at the end. This sum of 5 random numbers produces a near-Gaussian distribution with a mean exactly at 100

The innate weight factor is finally equal to $0.5 + \text{Innate Value}/200$ and will therefore range between 0.5 and 1.5.

In addition, there is a weighting by the divergence of its size from the average of its species: if its size is X times greater than its Pokédex size, the calculated weight will be multiplied by that same factor X.

External impacts on weight

The Light Metal and Heavy Metal abilities have a near-permanent effect on a Pokémon's weight, halving or doubling it, respectively.

Holding the Float Stone cuts the weight in half.

The Autotomize move and Iron Ball temporarily alter it: Weight divided by 2 for each autotomize buff (up to a maximum of 3), and +50 kg with an Iron Ball (not visible in the Summary).

Natural Growth

Every Pokémon has a natural growth curve: it grows and gains weight with each level-up until it reaches full maturity.

A Pokémon is considered a “child” up to level 14. It's not uncommon for it to be very small at very low levels.

From level 15 to around level 35 (depending on the minimum level for its final evolution), we are more on a teenage Pokémon.

Beyond that, the Pokémon is considered adult and will have a weight and size that will hardly evolve anymore.

From level 50 onward, these values are fixed and no longer change.

This correlates with the evolutionary stage so that the Pokémon reaches its standard size and weight (the one defined by the Pokédex) halfway through its evolutionary progression.

Evolution diagram	Minimum weight	Average weight (Factor ×1)	Max weight
1 stage – phase 1 ⁽²⁾	Level 1 Factor = $1 / \sqrt{\text{Pokédex mass}}^{(1)}$ Range: [0.09 ~ 0.81]	Level 30	Level 50 Factor = 1.21 (always)
2 stages – phase 1	Level 1 Factor = $1 / \sqrt{\text{Pokédex mass}}^{(1)}$ Range: [0.16 ~ 0.81]	60% of the minimum level of evolution † (Minimum 15, max 30)	150% of the evolution level (minimum 30, max 50) Factor = 1.21 (always)
2 stages – phase 2 ⁽²⁾	Minimum level of evolution † $F = 0.375 + \text{Min lv of evol} / 80$ Range: [0.64 to 0.81 ^(‡) ~ 1]	(Minimum level of evol † + Level 50) / 2	Level 50 $F = (149 - \text{Min lv of evol}) / 100$ Range: [1 ~ 1.21]
3 stages – phase 1	Level 1 Factor = $1 / \sqrt{\text{Pokédex mass}}^{(1)}$ Range: [0.25 ~ 0.81]	60% of the minimum level of evolution † (Minimum 15, max 30)	150% of the level of the 1 st evolution (Minimum 30, max 50) Factor = 1.21 (always)

3 stages – phase 2	Minimum level of the 1 st evolution † $F = 0.375 + \text{Min Lv of evol} / 80$ Range: [0.49 to 0.81 (‡) ~ 1]	60% between the levels of 1 st and 2 nd evolutions † (Minimum 20, max 50)	150% of the level of the 2 nd evol (Minimum 30, max 50) $F = (149 - \text{Min lv of evol 1}) / 100$ Range: [1 ~ 1.21]
3 stages – phase 3 ⁽²⁾	Minimum level of the 2 nd evolution † $F = 0.375 + \text{Min Lv of evol} / 80$ Range: [0.81 ~ 1]	(Minimum level of the 2 nd evolution † + Level 50) / 2	Level 50 $F = (149 - \text{Min lv of evol 2}) / 100$ Range: [1 ~ 1.21]

Raise the factors to the square root to obtain the size variations.

† For evolutions using Stones or special method...

- The minimum evolution level counts as 15 for a base form
- If it's a second evolution, the minimum level is 20.
- If it is a level-based evolution, these thresholds are lowered to 10 and 15 respectively (early-evolving Bug-types will never evolve before these levels in Keltios).
- If a Pokémon falls below this level due to a hack, the age factor remains locked at the minimum for that species (no formula projection).
- In any case, cap the evolution level at 50 for calculations when there is this obelus (if an evolution takes place after level 50, the Pokémon has already finished growing).

‡ The value of $(1 / \sqrt{\text{Pokédex mass}})$ is still calculated for evolved forms. If this value is greater than the lower bound, it becomes the new lower bound without exceeding 0.81.

(1) If a Pokémon is naturally very light in its base form (< 1.5 kg), the level 1 weight factor will correspond to the upper bound (×0.81), resulting in almost imperceptible physical growth. Above 100 kg, the lower bound (×0.09) applies, resulting in very noticeable natural growth as the Pokémon levels up.

(2) A Mega Evolution doesn't change the phase and evolutionary pattern of the Pokémon (technically, it is just a change in form).

Height and weight assessment

Pokémon Size = Pokédex base × Innate size factor × Square root of the Pokémon's Age factor
Pokémon Weight = Pokédex base × Innate weight factor × Innate size factor × Pokémon Age factor × Ability, Autotomize and Float Stone modifiers + Iron Ball modifier

Rank	Size Value	Factor deviation	Probability (age factor excluded)	Quote from the evaluating NPC
XXXL	255	> 1,616	Noble: 6.22% Alpha: 0.81%	Now THIS is a BIG Pokémon! Wow, you almost never see one this huge!
XXL	161-254	1,244 ~ 1,616	Noble: 92.22% Alpha: 76.64% Standard: 1.56%	This is a serious big'un! Feels comforting to have such a bulky, reliable buddy around, doesn't it?
XL	144-160	1,176 ~ 1,24	Noble: 1.38% Alpha: 13.03% Standard: 4.91%	This one seems a good sight bigger than average! It's quite a specimen—take good care of it!
L	124-143	1,096 ~ 1,172	Noble: 0.18% Alpha: 7.43% Standard: 13.31%	This one seems a little bit bigger than average!

M	70-123	0.880 ~ 1.092	Alpha: 2.09% Standard: 60.44%	Look at that: a perfectly average-sized specimen! It's the gold standard for normality. Amazing!
S	50-69	0.800 ~ 0.876	Standard: 13.31%	This one seems a little bit smaller than average!
XS	33-49	0.732 ~ 0.796	Standard: 4.91%	This one seems a good sight smaller than average! It's quite a specimen—take good care of it!
XXS	8-32	0.632 ~ 0.728	Standard: 1.52%	This is truly a little one! A pint-sized powerhouse for this species. What a charmer!
XXXS	0-7	< 0.632	Standard: 0.04%	Now THIS is a tiny Pokémon! Wow, you almost never see one this little!

An evaluator looking for a maximum size (or weight) will not rely on the innate “Size value” score, but on the deviation factor, which includes the maturity of the Pokémon.

Knowing that a Pokémon that has reached full maturity (level 50) is granted a size bonus of up to +10% (maximum depending on the last level of evolution), this can allow it to reach rank XXXL even if not all of its genes are optimal.

Conversely, it would become almost impossible to maintain an XXXS size on an adult Pokémon if this logic is maintained. This is why an NPC looking for a minimum rather than a maximum size will ignore the age factor so as not to penalize a player who has had his Pokémon evaluated too late.

In all cases, the “age factor” must be at least 0.81 (i.e. an impact of at least $\times 0.9$ on height) for an evaluator to be able to judge its measurements, otherwise he will say that it is too young and cannot assess it accurately.

To reflect this in the summary, the size rating of the Pokémon will be...

- A "?" until the Pokémon is mature enough (maturity factor < 0.81).
- Will use the raw size score if it results below average (< 97), even if the Pokémon has a non-age factor of 1. (Up to 96, a Pokémon would never have been able to reach the "L" threshold, even at full maturity.)
- In other cases, it will be based on the most favorable value, including or not the age factor.
- Actual numerical values of size and mass will be displayed, excluding temporary conditions such as a held item or battle effect.