

From ‘Inca Gesha’ to SL9-Like: Genetic Identity, Terroir, Sensory Convergence, and Value Formation in Peruvian Specialty Coffee

Inca Gesha Evidence Synthesis Project

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Abstract

Peruvian coffees marketed as “Inca Gesha” have acquired prestige through high-elevation production, competition success, floral and fruit-forward cup descriptions, and association with the globally valuable Gesha name ([Cup of Excellence 2018](#); [Fischer 2021](#)). This paper asks whether the label denotes Panamanian T2722-derived Geisha, historical Kenyan SL9, a stable Peruvian population, or a market category. The evidence is asymmetric. A private laboratory interpretation reproduced by a technical industry source reportedly found one Peruvian leaf submission unlike RD2’s undisclosed Geisha comparator and very close to SL09, but also described its fingerprint as previously unseen. The complete report, sample manifest, allele data, comparison distances, reference identities, and chain of custody are not public ([Feran 2026](#); [RD2 Vision n.d.](#)). If the undisclosed Geisha comparator was authenticated T2722 and the submitted sample and custody were sound, the result weighs against an unqualified T2722 claim more strongly than it proves exact SL9 identity, population-wide generalization, or any Kenya-to-Peru introduction route. No peer-reviewed study directly measures the agronomy or sensory properties of authenticated Peruvian Inca Gesha/SL09 material. Regional Peruvian studies concern Typica and Catimor, while controlled research shows that genotype, environment, fermentation, roast, brew, and panel design can all shape overlapping floral and citrus expression ([OpenAlex 2026a](#); [Márquez-Romero et al. 2020](#); [Choque-Quispe et al. 2025](#); [Marie et al. 2024](#); [Castillo Avilés et al. 2024](#); [Koyner et al. 2025](#)). Auction and product records document high realized value and unstable naming, but cannot isolate a causal Gesha-name premium ([Cup of Excellence 2020](#); [Donnet et al. 2008](#)). Reclassification would invalidate a Panamanian-Gesha pedigree claim for an auditable nonmatching sample; the present public evidence instead supports “not authenticated as T2722.” Neither outcome erases documented producer, geographic, sensory, competition, or transaction evidence. The defensible commercial identity is a transparent local name paired with lot-specific, provisional genetic language and auditable provenance.

Keywords: Inca Gesha; Inca Geisha; SL9; SL09; *Coffea arabica*; coffee genetics; Peru; sensory science; specialty coffee

Introduction

“Inca Gesha” sits at the intersection of biological classification and specialty-coffee storytelling. The name has been attached to prize-winning Peruvian lots, high-elevation Cusco production, and sensory descriptions that overlap the floral, citrus, tea-like, and fruit-forward vocabulary associated with Panamanian Geisha. That association matters economically because specialty markets use variety, origin, score, scarcity, and narrative as signals, while global authentication work shows that only a

minority of submitted Gesha samples exactly matched the CATIE T2722 reference in one large database (Fischer 2021, 116-17 and 126-127; Pruvot-Woehl et al. 2020, 329 and 332-333).

The central problem is that one label can carry several non-equivalent meanings. It may be a farmer or cooperative's local name, a literal cultivar claim, a description of perceived cup resemblance, a shorthand for a reported nearest genetic reference, or a market device that joins Peruvian identity to Gesha prestige. "Gesha," "Geisha," "T2722," "Inca Gesha," "SL9," "SL09," and "SL-09" therefore cannot be normalized into synonyms before the evidence is examined. World Coffee Research itself warns that multiple genetically distinct plant types have circulated as Geisha (World Coffee Research n.d., introductory summary and "History").

This paper evaluates five connected identities. Genetic identity asks how a submitted sample relates to authenticated references. Agronomic identity concerns morphology, phenology, yield, elevation response, disease and pest response, and stability across environments. Sensory identity concerns measured perception and chemistry after accounting for process and roast. Historical identity asks when a name appeared and how planting material allegedly moved. Market identity concerns how labels, scores, provenance, scarcity, and narratives contribute to value. The evidence capable of answering one dimension is not automatically valid for another (Pruvot-Woehl et al. 2020, "Data Analysis" and "Discussion"; Cheng et al. 2016).

The inquiry yields an intentionally narrower conclusion than the strongest commercial claims. One publicly discussed Peruvian leaf submission was reportedly unlike RD2's undisclosed Geisha comparator and very close to an SL09 reference, while its exact fingerprint was described as previously unseen in the comparison database. Because the complete laboratory report and underlying data remain private, this finding is better expressed as **SL9-like** or **provisionally closest to SL09** than as a definitive, population-wide SL9 identification. It weighs strongly against T2722 only if the undisclosed comparator was an authenticated T2722 reference and the submitted sample and custody were sound (Feran 2026, report-page transcription under "Inca Gesha, or should we say SL-9?"; RD2 Vision n.d.).

That calibration does not demote the coffee's documented achievements. A genetic correction can invalidate a claimed pedigree while leaving a farm, producer, country, lot, score, sensory result, and sale price intact. The analytical task is thus not to choose between "valuable Gesha" and "worthless mislabel," but to identify which components of value remain evidenced after the borrowed pedigree is removed. This distinction is consistent with auction research in which material and symbolic attributes jointly shape prices rather than one name acting alone (Donnet et al. 2008; Traore et al. 2018).

Research Questions

1. What is the strongest publicly inspectable evidence about the genetic relationship between Peruvian material marketed as Inca Gesha, T2722-derived Panamanian Geisha, and historical SL.9/SL09?
2. How far can a nearest-reference SSR result support cultivar identity, population identity, and a route of introduction?
3. What agronomic and sensory properties have actually been measured in the disputed Peruvian material, as distinct from regional Typica/Catimor evidence and product descriptions?
4. When and how did Gesha, SL-09, Inca Gesha, and dual-label terminology appear in Peruvian competition and market records?
5. Which variety, provenance, sensory, and value claims survive an SL9-like classification, and what disclosure standard follows?

Methods and Source-Evaluation Framework

The search was conducted through 15 July 2026 in English and Spanish. It combined exact-name variants with Peru, Cusco, La Convención, Inkawasi/Incahuasi, genetics, DNA, fingerprinting, accession, agronomy, sensory, processing, auction, price, and producer terms. Automated discovery used OpenAlex, followed by DOI and Crossref verification, PubMed Central, publisher full texts, institutional repositories, WCR, CATIE, Peruvian government pages, auction archives, and direct inspection of traceable trade and seller pages. Exact OpenAlex full-text searches returned no responsive “Inca Gesha” paper and one false-positive “SL9 coffee Peru” result, so absence from that index was treated as a search result - not proof that no study exists ([OpenAlex 2026a](#), [2026b](#)).

Every candidate remains in `data/source_index.csv`, including rejected records and a reason for exclusion. The inclusion hierarchy was: peer-reviewed or official primary research and inspectable lab reports; institutional catalogs and government records; technically detailed industry reporting; and commercial or auction pages used only to document what was represented, described, priced, or sold. Search snippets served only for discovery. PDF claims required page locators; HTML claims required headings, paragraphs, table rows, or other reproducible locators plus the access date ([Pruvot-Woehl et al. 2020](#); [Feran 2026](#); [SEY Coffee 2026a](#)).

Claims were decomposed in `data/evidence_ledger.csv` and graded for directness, strength, and limitations. A variety claim required a sample-to-reference comparison; a historical route required documentary custody or archival transfer evidence; an agronomic claim required direct observation of authenticated material; a cultivar-specific sensory claim required a design able to separate genotype

from environment and processing; and a market-causality claim required a comparison that controlled score, rank, producer, lot size, year, process, and bidder conditions. Commercial sources were never used as scientific proof ([Pruvot-Woehl et al. 2020](#); [Marie et al. 2024](#); [Donnet et al. 2008](#)).

For genetics, the paper distinguishes rejection, exact match, cluster membership, and nearest-reference similarity. SSR fragment patterns in tetraploid Arabica are allelic phenotypes rather than whole-genome identities, and their interpretation depends on loci, references, database composition, distance metric, thresholds, and quality controls. The published eight-SSR WCR workflow and the later ten-SSR diversity study provide methodological comparators, but neither can be assumed to be the undisclosed protocol of the private Peruvian job ([Pruvot-Woehl et al. 2020](#), 327-33; [Montagnon et al. 2022](#), 4-10).

For agronomy and sensory evidence, direct Peruvian studies were separated from regional context and from Panamanian or Nicaraguan comparator studies. The causal model was explicitly multi-stage: genotype interacts with site and season, crop management, cherry selection, fermentation, drying and storage, roast, brew, and assessor context. Controlled work was used to show that genotype can contribute; fermentation, roast, region, and panel studies were used to show why perceived resemblance cannot identify ancestry ([Marie et al. 2024](#); [Ledezma et al. 2025](#); [Castillo Avilés et al. 2024](#); [Koyner et al. 2025](#)).

For market history, the unit of evidence was the dated page, lot, label, score, quantity, or price. Auction observations demonstrate realized value but do not estimate the causal effect of a name. Conflicting labels were retained rather than harmonized. Prices at farm gate, FOB, DDP, auction, and retail were not treated as directly comparable. The paper therefore reports transactions and disclosure practices while relying on hedonic and ethnographic research only for the more general proposition that value is assembled from multiple material and symbolic attributes ([Donnet et al. 2008](#); [Fischer 2021](#); [Traore et al. 2018](#)).

Historical and Genetic Background of Gesha

The name “Inca Gesha” compresses three propositions that must be evaluated separately. The first is a naming proposition: farmers, exporters, or roasters have used “Inca Gesha” or “Inca Geisha” for particular Peruvian trees and lots. The second is a classification proposition: those trees belong genetically either to the reference population associated with Panamanian Geisha, to historical SL9, or to some other population. The third is a provenance proposition: the material reached Peru by a particular historical route. Evidence for one proposition cannot automatically establish the others. A locally stable name can exist without genetic conformity; a fingerprint can place a sample near a reference without identifying its route of introduction; and a premium cup profile cannot authenticate ancestry. This separation is essential because the private interpretation is stronger in its reported

rejection of its own undisclosed Geisha comparator than in its exact SL09 assignment, while the public record does not establish that the comparator was authenticated T2722 or supply historical provenance (Pruvot-Woehl et al. 2020, “Discussion” and “Focus on Genetic Conformity”; Feran 2026, “Inca Gesha, or should we say SL-9?”).

The spellings *Geisha* and *Gesha* do not distinguish genotypes. World Coffee Research explains that early germplasm records used “Geisha,” while “Gesha” is often preferred because it reflects the usual English rendering of the Ethiopian place-name; both circulate because transliteration from Ethiopian dialects is not fixed. This paper preserves a source’s spelling and uses “Panamanian Geisha” for the T2722-derived reference, but treats orthography alone as no evidence of identity (World Coffee Research n.d., “History,” accessed 2026-07-15).

The Panamanian Geisha reference

The relevant comparator is not the word *Gesha* in the abstract but the documented material descended from CATIE accession T2722. World Coffee Research (WCR) classifies Geisha (Panama) as an Ethiopian landrace and describes T2722-derived Panamanian material as genetically distinct and relatively uniform. Its institutional history begins with coffee collected in Ethiopia in the 1930s, transferred through East African research stations, received by CATIE in 1953, and later distributed to Panama. WCR also cautions that the name Geisha is applied to genetically different plants, so the market label alone does not establish membership in the T2722-derived population (World Coffee Research n.d., “Genetic Description,” “Lineage,” and “History,” accessed 2026-07-15).

Anzueto’s reconstruction adds detail to that chain. The likely 1931 collection involved bulk seed from different trees near Geisha mountain; material moved to Kitale in Kenya and then to Kawanda in Uganda and Lyamungu in Tanzania. CATIE received the introduction coded T2722 in July 1953 as progeny VC-496 and subsequently distributed seed in Latin America, including Panama. Thus, even the reference has a population history rather than being a claim about a single immutable wild-tree genome. Nevertheless, it has a traceable institutional accession and transfer history against which present samples can be compared (Anzueto 2021, English PDF pp. 4-5, printed pp. 3-4).

The practical consequence is asymmetric. A reliable fingerprint can provide strong evidence that a submitted tree is not compatible with the T2722 reference, thereby invalidating a literal claim of Panamanian-Geisha genetic identity for that tree. The same result does not show that every plant sharing its vernacular name is genetically identical, nor does it reveal how the submitted material entered Peru. Classification is a comparison between profiles; provenance is a historical account requiring documentary continuity (Pruvot-Woehl et al. 2020, “Coffee Samples,” “Data Analysis,” and “Discussion”; World Coffee Research n.d., “History,” accessed 2026-07-15).

What SSR fingerprinting resolves

The best published guide to the relevant authentication method is Pruvot-Woehl and colleagues' analysis of 2,533 coffee samples. DNA was processed by ADNiD/Qualtech using eight simple-sequence-repeat (SSR) loci, PCR amplification, capillary electrophoresis, GeneMapper allele calling, and visual review; CATIE T.02722 served as the Gesha reference. The method records the presence or absence of fragment-size alleles. Because *Coffea arabica* is tetraploid, the observed result is properly an SSR allelic phenotype rather than a complete genotype: different chromosomal arrangements can produce the same observed set of alleles (Pruvot-Woehl et al. 2020, "Materials and Methods - Coffee Samples," "DNA Extraction and SSR Marker Analysis," and "Data Analysis").

This distinction does not make fingerprinting uninformative. In the published dataset, only 39 percent of 88 submissions labeled Gesha exactly conformed to the T2722 reference, 24 percent fell close to the Gesha cluster, and 37 percent had unrelated genetic backgrounds. The study therefore demonstrates both the discriminatory value of a small SSR panel and the prevalence of label nonconformity. It also documents limits: some close cultivars could not be distinguished, old East African materials could form broader population clusters, and the defensible result in such cases may be "compatible with" a type rather than an unqualified variety identification (Pruvot-Woehl et al. 2020, "Results - Ethiopian and Sudanese Landraces," "Results - Focus on Genetic Conformity," and "Discussion").

A later diversity study clarifies the phrase "Ethiopian Legacy," which appears in the reported interpretation of the Peruvian sample. Montagnon and colleagues analyzed 555 Ethiopian, Yemeni, and worldwide cultivated samples with ten SSR markers and an admixture model. They assigned SL-09, SL-14, SL-17, SL-34, and K-7 to a broad cluster named "Ethiopian Legacy," interpreted as a link between southern Ethiopian diversity and domestication pathways in Yemen and Hararge. The term is therefore a population-cluster label, not a synonym for "Ethiopian landrace," and membership in that cluster does not distinguish SL09 from every other member (Montagnon et al. 2022, PDF pp. 4-5, 7-10, and 14).

The 2022 study also reinforces a methodological caution. It used a specified ten-locus panel, Dice-index dissimilarities, principal-coordinate and cluster analyses, and an admixture model; it again treated SSR observations as allelic phenotypes. Those details show why a report should disclose its marker panel, reference accessions, distance measure, database composition, and decision threshold. Without them, "closest to SL09" identifies the nearest available comparator under an undisclosed analytical configuration, not necessarily an exact historical SL9 genotype (Montagnon et al. 2022, PDF pp. 4-6 and 9; Pruvot-Woehl et al. 2020, "Data Analysis" and "Discussion").

Historical SL.9

The label itself is not globally unique. Feran notes that at least two distinct cultivars have commonly been called SL-09, including Indian “Selection 9”; the reproduced RD2 interpretation appears to refer instead to the Kenyan Scott Laboratories selection described by Jones. Because the private report does not disclose its exact SL09 reference accession, even that referent remains provisional. SL.9, SL9, SL09, and SL-09 are treated as spelling variants only when a source clearly means the Kenyan selection ([Feran 2026](#), paragraph following the reproduced report and “Scott Labs Selection 9”; [Jones 1956](#), PDF pp. 11-12).

The controlling primary description is P. A. Jones’s 1956 account of Kenyan coffee varieties. Jones states that Scott Agricultural Laboratories made individual-tree selections between 1935 and 1939 from material of varied origins. SL.9 was selected from a block whose origin was already recorded as unknown. The entry describes a medium-broad-leaved, copper-tipped plant that produced heavy crops of good quality at middle altitudes but was highly susceptible to coffee berry disease. It does not document a controlled cross, a named parent, a precise Ethiopian collecting site, an accession link to T2722, or any transfer to Peru ([Jones 1956](#), PDF pp. 11-12, printed bulletin pp. 307-308, “S.L. Selections” and “SL.9”).

Modern clustering can add a population-level relationship to that sparse history, but it cannot retroactively supply the missing parentage. The inclusion of an SL-09 reference in the Ethiopian Legacy cluster indicates similarity across the markers and samples used in that study. It does not erase Jones’s unknown-origin record, prove that every present reference plant is identical to the 1930s selection, or establish that a modern Peruvian near-match descends directly from it. Germplasm mislabeling, seed segregation, cross-pollination, drift, and incomplete reference sampling remain plausible explanations for small differences among old accessions ([Montagnon et al. 2022](#), PDF pp. 5, 7, and 10; [Pruvot-Woehl et al. 2020](#), “Discussion”; [Jones 1956](#), PDF pp. 11-12).

Evidence Concerning SL9 Identity

The reported Peruvian result

The strongest public account of a Peruvian test is Christopher Feran’s 2026 investigation. Feran recounts that Lance Schnorenberg of SEY collected leaves from a tree that a farmer called “Inca Gesha,” sent them to Christophe Montagnon’s RD2 Vision laboratory, and later sent Feran the resulting report. Feran identifies the passage he reproduces as page 6, “Analysis and interpretation.” In that transcription, RD2 describes a fingerprint not previously seen in its database, places it within the Ethiopian Legacy group, calls it very close to SL09 and potentially SL09 if slight changes in old reference material are allowed, and distinguishes it from an undisclosed Geisha comparator ([Feran 2026](#), “Inca Gesha, or should we say

SL-9?,” paragraph beginning “I opened the text message from Lance,” reproducing report p. 6, “Analysis and interpretation,” accessed 2026-07-15).

This is meaningful but indirect evidence. A named collector, scientist, laboratory, tissue type, and report page are publicly traceable, and the wording reportedly distances the sample from an unnamed Geisha comparator more strongly than it confirms an exact SL09 identity. Yet the six-page report itself is not linked. Public readers cannot inspect its job number or date, sample manifest, number of trees, collection and custody record, raw allele calls, electropherograms, marker list, controls, replicate results, Geisha or SL09 reference accessions, database version, distance value, classification threshold, or signatures. Feran calls the test an eleven-SSR analysis, while RD2’s current public service page only refers generally to molecular markers; the actual job protocol is therefore not independently verifiable (Feran 2026, same section and report-page transcription; RD2 Vision n.d., “What do you need for DNA fingerprinting?” and “What is the result?,” accessed 2026-07-15).

Later trade and retail pages broaden the narrative but do not repair those gaps. Khipu attributes testing to SEY and RD2 and records producer testimony that the material was only similar to SL09 and lacked an exact database match. SEY’s product pages correct earlier use of Gesha and describe SL9 as a working or provisional name. Neither publisher releases a laboratory report, sample-to-lot custody record, raw profile, or representative sampling frame. Repeated copy across several farms or products therefore documents the circulation of a classification claim, not proof that every farm, lot, or tree was independently tested (Russell 2026, “The Shape of the Bean,” “Only Similar to an SL09,” and “The Lost Records,” accessed 2026-07-15; SEY Coffee 2025b, “About Julio” and “About SL9,” accessed 2026-07-15; SEY Coffee 2026b, “About SL9,” accessed 2026-07-15).

On the public evidence, the most defensible classification is therefore **SL9-like or provisionally classified near SL09**, not definitively SL9. The result reportedly supports two nested conclusions with different confidence: first, the submitted tree was not close to RD2’s undisclosed Geisha comparator; second, among the references considered, it was very close to an undisclosed SL09 accession. If the Geisha comparator was authenticated T2722 and sample custody was sound, the first result would weigh strongly against a T2722 claim. The public record does not establish either reference identity, an exact match, the uniformity of the farmer’s planting, or the identity of other Peruvian material sold under the same name. Claims about “most” or “all” Inca Gesha exceed the disclosed sample universe (Feran 2026, report p. 6 transcription under “Inca Gesha, or should we say SL-9?”; Pruvot-Woehl et al. 2020, “Data Analysis” and “Discussion”).

Classification is not a route of introduction

Even an exact fingerprint would not specify when, where, or through whom seed reached Peru. Feran and later industry accounts record several possible oral histories involving family transfers, local

nurseries, educational travel, monasteries, or material introduced from elsewhere in Latin America. These narratives are useful leads, but no publicly located accession record, phytosanitary document, seed shipment, research-station register, nursery ledger, or continuous farm record corroborates a route. Feran’s later updates explicitly frame route reconstructions as speculative, while Jones’s original description leaves the source block of SL9 unknown at the beginning of the chain (Feran 2026, historical-route sections and three update blocks whose displayed 2025 dates conflict with the page’s 2 January 2026 publication date; Jones 1956, PDF pp. 11-12).

Genetic proximity can narrow plausible relationships, but it cannot distinguish direct descent from historical Kenyan SL9 from shared ancestry, an unsampled sister population, altered or mislabeled reference material, cross-pollinated descendants, or another member of the same broad genetic cluster. Establishing a route would require agreement between genetics and documentary evidence: multiple tagged-tree samples across farms, authenticated reference material tested in the same run, blinded replicates, and archival records connecting seed movements to the present plantings. Until such evidence appears, “SL9-like material cultivated in Peru” is a classification statement; “SL9 was introduced from Kenya to Peru by route X” remains an unverified historical hypothesis (Montagnon et al. 2022, PDF pp. 5, 7-10; Pruvot-Woehl et al. 2020, “Discussion”; Feran 2026, historical-route sections).

Consequences for variety and value claims

The evidence changes the validity of variety claims more directly than it changes assessments of quality. A premium explicitly justified by authenticated Panamanian-Geisha genetics becomes unsupported if an auditable test places the tree away from authenticated T2722; the present public account instead supports the narrower statement that the tree is not authenticated as T2722. Neither finding implies poor sensory quality, commonness, low agronomic value, or deception by the farmer. Quality, documented lot availability, producer skill, processing, traceable farm origin, and consumer preference are separate empirical and commercial attributes. Sellers can preserve the local naming history while disclosing that “Inca Gesha” is a vernacular or former market name and that SL9 is a provisional genetic classification (Feran 2026, “Inca Gesha, or should we say SL-9?”; SEY Coffee 2025b, “About Julio” and “About SL9”; Russell 2026, “Only Similar to an SL9”).

The evidentiary standard should therefore track the precision of the claim. “Historically sold as Inca Gesha” is supported by market records; “one submitted tree was reportedly unlike RD2’s Geisha comparator and closest to an SL9 reference” accurately attributes the present public account; and “the Peruvian population is historical SL9” is not yet established. Publication of the complete redacted RD2 report, sample metadata, allele profiles, reference identities, and independent multi-farm replication could materially strengthen or revise that conclusion. For now, transparent uncertainty is not a defect in

the account but its most scientifically accurate feature ([Feran 2026](#), report p. 6 transcription and surrounding account; [RD2 Vision n.d.](#), service description; [Pruvot-Woehl et al. 2020](#), “Discussion”).

Agronomy, Geography, and Terroir

The agronomic evidence requires a firm distinction between the Peruvian production landscape and the disputed plant material. Project searches located no peer-reviewed field trial, common-garden experiment, morphological, yield, disease-resistance, or analytical sensory study of material identified as “Inca Gesha,” “Inca Geisha,” Peruvian SL09, or SL9. Peruvian scholarship instead examines regional systems and, where specified, Typica and Catimor. Official and commercial records use *Geisha* and *SL09/SL9* for particular Inkawasi coffees but provide no accession numbers, verified tree identities, or experimental agronomic data. Regional evidence can therefore describe the production setting, but not establish the disputed coffee’s morphology, adaptation, yield, or disease response ([OpenAlex 2026a](#), [2026b](#); [Márquez-Romero et al. 2020](#), 40-49; [Choque-Quispe et al. 2025](#), Abstract and §§2.1-3.6).

At regional scale, PROMPERÚ’s sensory map places most Cusco coffee production in La Convención, in forest-zone valleys and ravines spanning approximately 900-2,000 m. Its Cusco sheet reports Typica, Caturra, and Bourbon, a March-September harvest, washed processing, 16.4 °C average temperature, 1,361 mm annual precipitation, and pH 4.4 for a soil sample. These figures require historical qualification: the area and production statistics derive from EMDA 2016, the processing context cites an older Agrobanco source, and the pH is not a district survey. The cup profile is likewise not representative of all Cusco coffee: PROMPERÚ admitted only washed 2018 coffees meeting strict physical criteria and at least 84 SCA points, selecting specialty lots rather than estimating a population mean ([Comisión de Promoción del Perú para la Exportación y el Turismo 2019](#), 10-12, 25-26).

The most substantial La Convención field study sampled 90 agricultural units from 156 Cirialo farms across 900-1,715 m. It describes a rugged Alto Urubamba landscape with steep slopes, humid forest, streams, and coffee managed in traditional, conventional, and certified-organic shade systems. Reported shade associates included *Inga*, Andean walnut, avocado, orange, and mango; harvest was manual and selective, followed by wet processing, natural fermentation, washing, and solar drying. The study standardized its research samples more tightly - ripe cherries, separate 12-18-hour fermentation, drying to 10-12.5% moisture, controlled roast color, and evaluation by three certified Q Graders. Across Typica and Catimor, mean physical yield was about 81.1%, apparent green density 741 g/L, defects 1.97%, and cup score 82.17. The maximum, 84.75 for Typica at 1,715 m, was described as floral and sweet with lemon verbena, bright acidity, and a soft, lasting body ([Márquez-Romero et al. 2020](#), 40, 42-49).

Those results establish the feasibility and variability of washed specialty coffee in La Convención, not an intrinsic high-altitude or varietal effect. Cultivar, elevation, farm, harvest date, shade, crop management,

and processing covaried, and the study was descriptive rather than a randomized genotype-by-environment trial. Its discussion of Typica's rust susceptibility and gradual replacement by Timor-hybrid-derived material provides useful historical context, but disease incidence was not experimentally measured. Consequently, neither the highest Typica score nor the regional floral descriptors can be transferred to Inca Gesha or SL09. They instead demonstrate a central identification problem: ordinary regional cultivars under selective harvest and careful washed processing can also produce descriptors that the trade associates with Gesha ([Márquez-Romero et al. 2020](#), 41, 44, 47-49).

A 2025 study is geographically closer because it analyzed San Fernando Cooperative coffee from Inkawasi at 1,600, 1,800, and 2,100 m. It reports steep, manually cultivated terrain and measures defects, pest damage, exportable yield, and cup attributes for Typica and Catimor. Typica at 1,800-2,100 m received the strongest sensory evaluations, including floral and fruity descriptions, while exportable yield was 79.12-81.98%. Yet the article does not disclose independent farms, trees, or biological replicates per cultivar-by-altitude cell; "triplicate" may mean repeated preparation. It also misstates the ratio of 11 g coffee to 200 mL water, inconsistently calls the panel certified or cooperative-trained, and reverses Typica and Catimor rust responses. The defensible inference is an association within sampled lots, not proof that altitude caused the difference ([Choque-Quispe et al. 2025](#), Abstract, §§1.4, 2.1, 2.4-2.7, 3.4-3.6).

Official records nevertheless confirm that the disputed names circulate in the same landscape. Inkawasi's municipality reported a 2024 nursery project preparing more than 200,000 combined "Geisha" and hybrid seedlings, without disaggregating their numbers or documenting seed source, trial performance, or identity testing. In August 2025, the municipality reported a district competition category called "Variedad Geisha." In November, Cusco's regional agriculture office called two highly placed Inkawasi FICAFÉ lots "SL09," including a honey-process lot scoring 89.97, while separately calling a Santa Teresa lot washed "Gueisha." Similar but differently spelled producer names appear in the district and regional reports, so continuity of person, planting, or physical lot cannot be assumed. These records document an evolving institutional vocabulary and named competition outcomes; they do not show that every locally called Geisha is one genotype ([Municipalidad Distrital de Inkawasi 2024](#), body ¶¶1-2; [Municipalidad Distrital de Inkawasi 2025](#), body ¶¶2-3 and winner list; [Gerencia Regional de Agricultura de Cusco 2025](#), body ¶¶3-4).

The appropriate agronomic conclusion is therefore deliberately narrow. Inkawasi lies within a high-relief specialty-coffee system where elevation, shade, manual selection, wet processing, pests, and access constraints plausibly shape both production and value. But Panamanian Geisha's catalogued traits - tall stature, low yield, particular disease responses, and exceptional high-altitude quality potential - cannot be assigned to Peruvian material merely because farmers, officials, or sellers used a similar name. World Coffee Research itself warns that genetically distinct plants have been called Geisha. Until verified

Peruvian trees are assessed in replicated multi-location trials, the agronomic identity of the SL09-like population remains unresolved ([World Coffee Research n.d.](#), sections “Stature,” “Yield Potential,” “Additional agronomic information,” “Genetic Description,” and “History”; [Gobierno Regional Cusco 2022](#), body ¶¶1-10; [Gerencia Regional de Agricultura de Cusco 2026](#), body ¶¶1-4).

Processing, Roasting, and Sensory Evidence

Sensory identity must be analyzed as a phenotype generated along a chain: genotype interacts with site and season, crop management, cherry maturity and selection, fermentation, drying and storage, roast trajectory, brewing, and assessor context. These factors do not imply that genetics is irrelevant. Rather, they mean that cup resemblance is many-to-one: different causal pathways can produce overlapping floral, citrus, tea-like, jasmine, peach, or tropical-fruit language, while the same genotype can diverge across farms and processing regimes. Sensory resemblance can justify genetic testing, but it cannot substitute for it ([Marie et al. 2024](#), Background and “Plant materials and samples processing”; [Ledezma et al. 2025](#), secs. 2.1-2.4, 4-4.1; [Castillo Avilés et al. 2024](#), 31-43).

The strongest evidence for a genuine genotype contribution comes from a controlled comparison of Geisha Especial, Ethiopian accession ET47, Catimor T5175, and Sarchimor Marsellesa. Researchers grew the four pure lines at one Nicaraguan site, randomized trees in barrels under shelter, controlled water, fertilizer, and flowering initiation, standardized wet processing and roasting, and used two independent four-judge panels. Geisha Especial led the positive fruitiness and acidity measures and was uniquely described among the four as floral and fruity, with orange/mandarin character and balanced acidity. Volatilomics found a significant genotype effect on nine of 31 green-bean compounds, including six monoterpenes; Geisha formed a distinct cluster, and complementary transcriptomic and functional-expression work linked elevated terpene-pathway activity and a limonene synthase to the citrus-associated chemistry ([Marie et al. 2024](#), “Plant materials and samples processing,” “Sensory analysis,” “Sensory characteristics of Geisha Especial,” “Identification of organic volatile substances,” and “Functional characterization of Ca TPS10-like enzyme”).

That experiment supports genetic influence but is not an authentication assay. Only two Geisha trees survived for biochemical analysis, beans were pooled by cultivar for sensory work, and one site, season, process, roast, and brewing protocol were represented. The authors did not measure volatiles in the brewed beverage and acknowledged matrix, extraction, perception-threshold, and environmental effects. More importantly, Geisha Especial was a selected Costa Rican-sourced accession grown in Nicaragua, not an Inca Gesha or SL09 sample. Its citrus/floral phenotype cannot be inverted into the proposition that any citrus/floral Peruvian coffee shares its ancestry ([Marie et al. 2024](#), “Plant materials and samples processing,” “Sensory analysis,” Discussion, and Conclusions).

Panamanian studies demonstrate how much expression varies after genotype is nominally held constant. Ledezma and colleagues compared 24 washed, farm-supplied Geisha samples from four production zones, standardized the laboratory roast and brew, and used 24 screened consumers in repeated RATA evaluation. Descriptor frequencies differed, but macro-physicochemical measures did not drive regional separation, correspondence and multiple-factor analyses showed limited and cross-regional structure, and discriminant analysis omitted Potrerillos because it had only two samples. Farm processing and selection had followed each producer's internal parameters, genetic identity was not independently reported, environmental data were missing, and the authors characterized the study as an initial exploration. The evidence supports heterogeneous sensory expression among marketed Geisha lots, not a uniquely environmental "terroir signature" (Ledezma et al. 2025, secs. 2.1-2.4, 3.1-3.2, 4-4.1, 5).

Fermentation can generate precisely the descriptors most easily mistaken for lineage. A Panama experiment isolated morphologically identified yeasts from natural-process Geisha and inoculated a different washed Geisha lot with native *Pichia*, native *Saccharomyces*, or commercial *S. cerevisiae*. Three replicates per treatment, standardized roast, and two certified Q Graders yielded final scores from 90.5 to 91.5, with treatment-level differences in aroma, acidity, aftertaste, and balance. Citrus, lemon, floral, vanilla, and bergamot were recorded for the *Pichia* treatment, while the commercial inoculum also produced citrus, fruit, lime, sweetness, and florals. Interpretation is limited by the two-person panel, lack of an uninoculated control, resident *Candida*, small sample, and genus-level morphological identification, but the experiment directly shows that fermentation ecology can shift Gesha-labeled cup expression (Castillo Avilés et al. 2024, 31-34, 39-43).

Roasting adds another non-genetic filter. Koyner and colleagues reported significantly different Panama Geisha sensory profiles from different roast techniques taken to the same final color: some treatments emphasized floral and bergamot associations and others citrus, medicinal, musty, or fermented qualities. Measured terpene concentrations did not map linearly onto perception, underscoring masking and compound interaction. A separate one-farm study of natural and washed Geisha across light, medium, and dark roasts found sensory differences and distinguished process and roast with chromatography and an electronic nose. Thus even nominally equal roast color does not equal an equal thermal history, and neither a roaster descriptor nor a competition score can be treated as a stable varietal fingerprint (Koyner et al. 2025, 6993; Santamaría et al. 2023, secs. 2.1, 3.3-3.4).

This framework preserves what remains valid if tested Peruvian material is SL09-like rather than Panamanian Gesha. Verified geographic provenance, producer identity, a lot's blinded cup score, and an honestly reported sensory profile do not disappear when ancestry is corrected. What fails is the literal Panamanian-Gesha variety claim and any causal statement that attributes quality to that pedigree. Where genetic comparison finds no exact database match, "closest to SL09" or "SL09-like" is more

accurate than “is SL9”; commercial pages reporting such tests remain provisional until sample identifiers, chain of custody, marker panel, reference accessions, assignment distances, and laboratory reports are inspectable. The coffee’s value can instead rest on traceable Peruvian origin, repeatable quality, documented lot-level availability, producer knowledge, and processing skill ([Counter Culture Coffee 2026](#), “Story” ¶¶3-6 and “Harvest”; [SEY Coffee 2026a](#), “Processing” and “About SL9”; [World Coffee Research n.d.](#), “History”).

The research priority is consequently not another round of unblinded tasting notes. It is an integrated design beginning with auditable fingerprints of mapped trees, followed by morphological and phenological description and replicated common-garden comparisons of verified SL09-like material, T2722-derived Panamanian Geisha, Typica, Catimor, and local controls. Cherries should be maturity-matched and assigned to standardized washed, honey, and natural treatments with monitored fermentation and drying, randomized roast curves, blinded descriptive and consumer panels, and volatile and nonvolatile chemistry over multiple harvests. Only that design can estimate genotype, environment, and processing effects while showing whether a locally named Peruvian population has stable agronomic and sensory properties of its own ([Marie et al. 2024](#), “Plant materials and samples processing”; [Ledezma et al. 2025](#), sec. 4.1; [Castillo Avilés et al. 2024](#), 43; [Choque-Quispe et al. 2025](#), secs. 2.1-2.7).

Emergence of “Inca Gesha” in Peru

The historical record begins with a geographic and terminological caution. Peru’s official administrative spelling is the district of **Inkawasi**, in La Convención Province, Cusco, while government and trade sources also use **Incahuasi** for the valley, a locality, and the coffee cooperative. One Ministry of Agriculture project entry uses Inkawasi for the district, Incahuasi for the valley, and both spellings for the cooperative. These forms should therefore be preserved according to source and referent rather than treated as evidence of different coffee origins. None of them authenticates a cultivar. In this section, “Inca Gesha” and “Geisha Inca” denote compound local or market names; “Gesha/Geisha,” “T2722,” and “SL9/SL09” remain distinct claims unless a source explicitly connects them ([Municipalidad Distrital de Inkawasi 2023](#), PDF p. 1, §1.1; [Ministerio de Agricultura y Riego n.d.](#), PDF pp. 12-13, project “Consolidación de la competitividad”).

The earliest strong market record located is the 2018 Peru Cup of Excellence. Its current results page identifies Dwight Aguilar Masías’s Nueva Alianza lots from Cusco as “Geisha,” gives both a score of 91.08, and records two first-place lots sold for \$45.10/lb, totaling \$19,388.49 and \$17,897.03. The page establishes the label under which the coffee competed and sold; as an auction description, it does not establish genetic identity. Counter Culture’s current Lucio Luque page supplies a separate retrospective

chronology: the buyer says Lucio's coffee and others were locally called "Inca Gesha," and that it sent two seed samples to World Coffee Research in 2018 because it doubted a Panamanian-Gesha relationship. No contemporaneous 2018 page or laboratory report was located, so 2018 is a reported test date, not a verified publication date for the compound name ([Cup of Excellence 2018](#), "Winning Farms," rows 1a-1b and "COE Auction Results," lots 1A-1B; [Counter Culture Coffee 2026](#), "Story," paras. 3-5).

The 2019 competition shows that even before SL-09 appeared publicly, the Gesha label did not have one stable form. Lucio Luque Vásquez's Nuevo Progreso entries were called "Gesha Bourbon Blend," scored 91.44, placed second, and sold as two lots for \$30.00/lb, realizing \$11,904.90 and \$11,838.90. Dwight Aguilar's Nueva Alianza entry was called "Gesha," scored 89.18, and sold for \$16.88/lb, totaling \$14,163.67. These entries provide named farms, producers, scores, blend language, and realized prices, but the blend description prevents attribution of Lucio's outcome to one cultivar. More broadly, a competition variety field is a market record, not an authentication method ([Cup of Excellence 2019](#), "Winning Farms," Nuevo Progreso rows 2a-2b and Nueva Alianza row 9, and "COE Auction Results," rows 2a-2b and 9).

The decisive nomenclatural break appears in the 2020 competition, but it was internally inconsistent. The official page calls Hilda Leguía Gonzales's two winning Esperanza lots "Gesha / SL-09 (Organic)," while listing Valerio Almanza Ccahua's Buena Vista and Lucio Luque's Nuevo Progreso as "SL-09 (Organic)." In the same table, Dwight Aguilar's Nueva Alianza remains "Gesha." Contemporary trade reporting described Hilda's lot more specifically as 50% Gesha and 50% organizer-identified SL-09, whereas *El Comercio* presented it simply as Geisha. Thus SL-09 was public by November 2020, but different channels simultaneously communicated a dual label, a mixture, or an unqualified Gesha name. The evidence documents classification instability; it cannot determine whether the farms held the same population, mixtures, or unrelated material ([Cup of Excellence 2020](#), "Winning Farms," rows 1a-1b, 9, 10, and 13; [Brown 2020](#), body paras. 3-6; [Contreras 2020](#), headline, deck, and body paras. 1-9).

The 2021 record confirms that relabeling was not a linear correction. Cup of Excellence again lists Dwight's Nueva Alianza and Lucio's Nuevo Progreso as "Gesha," at 90.2 and 88.97 points respectively, despite Lucio's SL-09 designation the previous year. A contemporaneous *Perú21* profile went further, calling Dwight's winning coffee "geisha (línea T-2722)" and reporting 90.25 points. That specific accession claim is not accompanied by a test or seed-document trail, and its score differs slightly from the official result. A live Port2050 seller page calls a Dwight Aguilar Nueva Alianza coffee "SL9 / Inca Gesha," creating a direct unresolved contrast between the 2021 T2722 claim and later dual labeling. These sources show what public claims circulated, not which claim is biologically correct ([Cup of Excellence 2021](#), "Winning Farms," Nueva Alianza rows 1a-1b and Nuevo Progreso row 7; [Vargas 2021](#),

body paras. 1-6 and “Cuando amas lo que haces,” paras. 1-6; [Port2050 Coffee Roasters n.d.](#), product title and fields “Origin,” “Variety,” and “Producer”).

The earliest directly dated use of the exact compound name located in this search is Ruben Dario’s November 8, 2022 article, “El Geisha Inca de Incahuasi.” Its cultural narrative names Lucio Luque, Hilda Leguía, and other Incahuasi producers, but supplies no genetic evidence. A May 2024 *Inforegión* interview provides clearer evidence of local terminology: cooperative representative Rubén Romero says the cooperative grows Geisha “al que denominan Geisha Inca.” Counter Culture’s current page retrospectively places “Inca Gesha” usage by the time of its 2018 inquiry, but no directly dated pre-2022 publication using the compound phrase was found. Later oral histories conflict and lack seed or nursery records. The defensible chronology is therefore “reported local use by 2018; directly documented online by 2022,” not a proven coinage or arrival date ([Dario 2022](#), title, date, and opening paras. 1-4; [Inforegión Redacción 2024](#), “Área de cultivo y tipos de café,” paras. 1-2; [Counter Culture Coffee 2026](#), “Story,” paras. 3-5; [Russell 2026](#), “The Seed and the Assumption”; [Feran 2026](#), three visibly labeled update blocks).

By 2025-2026, sellers had adopted three disclosure strategies. SEY’s Julio Arotaype page explicitly says the coffee had previously been marketed as Gesha, locally “Inca Gesha,” but was corrected to SL9 after deeper testing. Its Carlos Saenz page uses “SL9*” and calls the name provisional because the reported fingerprint is similar to, but not an exact match for, SL09. Port2050’s seller page retains both terms as “SL9 / Inca Gesha.” SEY also distinguishes a Luis Salas coffee, claimed to derive from Panama-sourced seed, as Gesha “rather than SL9 or ‘Inca Gesha.’” Meanwhile, FreeForm markets an “Inca Gesha” from the Rutas del Inca cooperative in Cajamarca. The phrase consequently cannot identify one geography, population, or pedigree without lot-level evidence ([SEY Coffee 2025b](#), “About Julio Arotaype” and “About SL9”; [SEY Coffee 2026a](#), “About SL9”; [Port2050 Coffee Roasters n.d.](#), product title and variety field; [SEY Coffee 2025a](#), product description and “About Luis Salas”; [FreeForm Coffee Roasters n.d.](#), “About the Coffee” and producer/origin/cultivar fields).

Naming, Market Signaling, and Value Formation

The realized-price record establishes commercial importance, but not a label treatment effect. Nueva Alianza’s two 2018 “Geisha” lots each achieved \$45.10/lb; the next listed lot achieved \$20.30/lb. In 2019, Nuevo Progreso’s “Gesha Bourbon Blend” lots achieved \$30.00/lb, while the higher-scoring first-place Costa Rica 95 lots achieved \$20.00 and \$19.80/lb. In 2020, a contemporaneous report says Hilda Leguía’s 380.84 kg dual-identified coffee realized \$42,752.47 and more than \$50/lb, then a record for Peruvian coffee. These comparisons are compatible with demand for a limited, Gesha-associated offering, but rank, score, lot size, sensory profile, producer reputation, bidder composition, and auction

year all changed simultaneously ([Cup of Excellence 2018](#), “COE Auction Results,” lots 1A-2; [Cup of Excellence 2019](#), “COE Auction Results,” rows 1a-2b; [Chaqra Runa 2020](#), deck and “Precio record,” paras. 1-2).

Hedonic research explains why those raw comparisons cannot yield a causal “Gesha-name premium.” Donnet, Weatherspoon, and Hoehn model specialty-auction prices as joint functions of sensory ratings, rank, country of origin, variety, quantity, auction year, and the commodity price. A recent Central American COE model similarly attributes price variation to score, processing, country, variety, and year. Its abstract reports Geisha at 0.90% below the Bourbon reference - the smallest variety decrease - not a positive premium, and does not state whether that coefficient differs significantly from zero. Neither study estimates the effect of renaming the same Peruvian lot while holding all other attributes constant ([Donnet et al. 2008](#), abstract and pp. 270-275; [Dimas Rodríguez et al. 2025](#), abstract and publication metadata).

The name can nevertheless carry value as a signal. Fischer’s ethnography describes high-end coffee as a market in which scores, provenance, scarcity, exclusivity, flavor distinction, and tastemaker narratives jointly construct value. It places Hacienda La Esmeralda Gesha’s crossing of the \$100/lb threshold in 2007 within a broader movement toward floral Gesha, limited lots, and origin stories that confer novelty and status. “Inca Gesha” can therefore evoke both the established prestige of Gesha and a distinctly Peruvian story of high-elevation, limited-lot production and producer knowledge. This mechanism is analytically plausible and historically grounded, but it is not a numerical estimate of what the words added to any Peruvian transaction ([Fischer 2021](#), 111, 116-17, and 126-127).

Authentication evidence makes disclosure economically relevant. Pruvot-Woehl and colleagues fingerprinted 2,533 Arabica samples using eight SSR markers and found that only 39% of submitted Gesha samples exactly conformed to the CATIE T.02722 reference; other samples were near the reference or unrelated. The authors identify seed-sector disorder and good-faith mislabeling as important causes and argue that fingerprinting lets roasters verify variety marketing. The study did not test any named Peruvian lot in this section, so its 39% result cannot classify Inca Gesha. It instead demonstrates that a famous variety name is an unreliable genetic proxy and that correcting a claim is ordinary quality assurance, not proof of fraud ([Pruvot-Woehl et al. 2020](#), 325, 329, and 332-333).

An SL09-like result therefore changes three claim categories differently. For a tested sample, a transparent non-match to T2722 would substantially invalidate “Panamanian Gesha,” “T2722,” or a literal Gesha-pedigree claim. If the closest reference is SL09 but no exact fingerprint exists, “SL9,” “SL09-like,” or “closest reported match to SL09” remains provisional rather than definitive. By contrast, a documented producer, farm, cooperative, Cusco origin, competition score, and realized auction price remain valid unless their own chain of custody fails. What becomes indefensible is attributing those

achievements causally to Panamanian ancestry or asserting a quantified Gesha premium without an appropriate comparison (Counter Culture Coffee 2026, “Story,” paras. 3-6; SEY Coffee 2026a, “About SL9”; Pruvot-Woehl et al. 2020, 329 and 332-333; Donnet et al. 2008, abstract and pp. 270-275).

Disclosure should consequently operate at lot level. Where an auditable report exists, a defensible description would state: “Local name: Inca Gesha/Geisha Inca; provisional genetic classification: closest reported match to SL09, not authenticated as T2722 Gesha,” followed by producer, farm, harvest, lot, laboratory, method, sample identifier, date, and report link. Where a lot itself has not been tested, the label should say that related regional material has been reported as SL09-like but that this lot remains unauthenticated. This approach preserves the locally meaningful name and its accumulated market recognition while preventing regional association, floral resemblance, or another farm’s test from becoming a false pedigree claim (SEY Coffee 2026a, “About SL9”; SEY Coffee 2025b, “About Julio Arotaype”; Russell 2026, “For years, we sold it as Geisha” and conclusion; Fera 2026, reported RD2 result and March/July updates).

The resulting value proposition is narrower but more durable. Producers need not surrender documented origin, awards, sensory performance, documented limited-lot availability, or accumulated knowledge because a borrowed pedigree is corrected. Buyers, however, should distinguish observed value - a traceable score, bid, or green price - from claimed value caused by the Gesha name. Until public sample-level reports and a controlled label study exist, “Inca Gesha” is best treated as a disclosed historical/local market designation, while “SL9” remains provisional where no exact reference match has been demonstrated. Value can then rest on what the record actually supports: named producers, Peruvian place, repeatable quality, limited lots, transparent processing and prices, and an uncertainty honestly stated rather than concealed (Fischer 2021, 116-17 and 126-127; Counter Culture Coffee 2026, “Story,” “Harvest,” and “Pricing”; SEY Coffee 2026a, “About SL9” and “Pricing Details”; Chaqra Runa 2020, “Precio record,” paras. 1-2).

Discussion

A five-part identity

The evidence supports a composite identity rather than a single replacement label. Genetically, the strongest public wording is one submitted tree **reported as unlike an undisclosed Geisha comparator and SL09-like**, not an exact, population-wide historical SL9. Agronomically, the material is uncharacterized in controlled trials. Sensorily, named lots may be excellent, but no authenticated Peruvian genotype study isolates the cause. Historically, Inca Gesha is demonstrably a changing local and market designation whose seed route is unresolved. Commercially, it is a high-attention Peruvian category with documented limited lots, scores, and prices, but without a measured name premium

(Feran 2026; Márquez-Romero et al. 2020; Choque-Quispe et al. 2025; Cup of Excellence 2018; Donnet et al. 2008).

Dimension	Best-supported present identity	Claim not presently supported
Genetic	One disclosed narrative reports a previously unrecorded fingerprint, unlike an undisclosed Geisha comparator and nearest to SL09 (Feran 2026)	All Inca Gesha is exact historical SL9, or the comparator was necessarily T2722
Agronomic	High-elevation Cusco/Inkawasi production context; no authenticated-material trial	Panamanian Geisha or SL9 yield, cold, altitude, or disease traits transfer to Peru
Sensory	Lot-specific floral, fruit, citrus, and sweet descriptions coexist with major process and roast effects	Cup resemblance authenticates ancestry or isolates a varietal effect
Historical	Local/market names and competition labels changed from 2018 onward; route unresolved	A documented Kenya-to-Peru introduction
Market	Named lots achieved high scores and prices; value joins quality and symbolic attributes	A quantified causal “Gesha-name premium” for Peruvian SL9-like coffee

The asymmetry of the genetic evidence is the pivotal finding. Reference-based fingerprinting can be decisive when a sample is demonstrably distant from an authenticated T2722 reference, because that directly contradicts a literal Panamanian-Geisha claim. Here, however, the private report’s Geisha reference accession is not public. Its reported “not even close to Geisha” language weighs against Panamanian identity only conditionally - if the comparator was the accepted T2722 reference and the submitted sample and custody were sound. The reported language still does more work as an exclusion than as an exact SL09 assignment (Feran 2026, report p. 6 transcription; Pruvot-Woehl et al. 2020, “Data Analysis” and “Discussion”; Montagnon et al. 2022, 5-10).

The resolution of the underlying methods matters. WCR’s later open database uses a 45-SNP panel for 23 common Latin American varieties and reports validation across more than 30,000 samples, including work in Peru, whereas the private Inca account is described as SSR-based and is not publicly connected to those records. A chromosome-level Geisha genome has also been published, but its plant came from California stock descended from Panamanian seed; it is a genomic resource, not an authentication of Peruvian trees. Invoking “DNA” or “genome” without naming the assay, sample, and reference can therefore create more certainty than the evidence warrants (World Coffee Research 2023; Medrano et al. 2025; Feran 2026).

The sample boundary is equally important. A leaf from one tagged tree can classify that tree if its collection and custody are sound. It cannot automatically classify every tree on the farm, every farm sharing seed, every retail lot bearing the name, or a market category that now appears outside Cusco. Repeated seller text may reflect several independent tests, one test generalized across products, or a

mixture of both; no public manifests permit de-duplication ([Feran 2026](#); [Russell 2026](#); [SEY Coffee 2025b](#); [Counter Culture Coffee 2026](#)).

Historical provenance remains a separate and weaker problem. Jones's 1956 primary description already records the source block of SL.9 as unknown. Modern SSR cluster membership can suggest relationships but cannot supply a missing shipment, nursery, monastery, cooperative, or family-transfer record. The oral histories are worth archiving because they identify people and places to investigate, but choosing one story because it fits the fingerprint would be circular ([Jones 1956](#), PDF pp. 11-12; [Feran 2026](#), historical sections and update block; [Russell 2026](#), "The Seed and the Assumption").

The sensory evidence resolves a different apparent contradiction. Genotype can matter: a common-environment study connected a Geisha Especial accession to sensory, volatile, transcriptomic, and enzyme-level differences. Yet the same literature also shows heterogeneous farm-supplied, study-designated, or Geisha-labeled lots, fermentation-induced changes, and roast-dependent shifts in floral, bergamot, citrus, medicinal, or musty perception. It is therefore scientifically coherent for an SL9-like Peruvian coffee to taste "Gesha-like," and equally coherent for Geisha-labeled material to taste different across treatments. Sensory resemblance is evidence about a cup, not a pedigree ([Marie et al. 2024](#); [Ledezma et al. 2025](#); [Castillo Avilés et al. 2024](#); [Koyner et al. 2025](#); [Santamaría et al. 2023](#)).

The market record suggests that correction need not destroy value. In the 2024 Peru Cup of Excellence, a producer-submitted SL-09 entry from Cusco scored 89.29 and sold 623.90 pounds at \$25/lb. The same official page warns that farm and lot information is supplied by farmers and should be evaluated by bidders, so the entry confirms the label, score, quantity, and sale - not genotype. Earlier dual-labeled lots reportedly exceeded \$50/lb. These records show realized demand after SL-09 language entered the market, while remaining unable to isolate why buyers bid ([Alliance for Coffee Excellence 2024](#), winning-farm row 7, auction lot 7, and page disclaimer; [Chaqra Runa 2020](#)).

Reclassification thus reallocates rather than annihilates the basis of value. A T2722 pedigree premium becomes unsupported for an auditable nonmatching tested sample; in the present public record, the undisclosed comparator instead requires the narrower phrase "not authenticated as T2722." Producer reputation, geographic traceability, documented limited lot size or availability, awards, carefully measured cup quality, and process innovation remain available foundations. Broader biological rarity is unmeasured. Transparent uncertainty may itself be more durable than a categorical claim vulnerable to later correction, provided uncertainty is not repackaged as a new certainty called "SL9" ([Fischer 2021](#); [Traore et al. 2018](#); [SEY Coffee 2026a](#)).

Implications for Claims, Labeling, and Value

The classification result should change wording in proportion to what was tested. The following matrix separates claims that fail, claims that remain provisional, and claims whose validity is independent of the disputed pedigree (Feran 2026; Pruvot-Woehl et al. 2020; SEY Coffee 2026a).

Claim	Effect of an auditable non-T2722, closest-to-SL09 result	Defensible replacement
"Panamanian Gesha," "T2722," or literal Gesha lineage	Invalidated for the tested nonmatching sample (Pruvot-Woehl et al. 2020; Feran 2026)	"Not authenticated as T2722 Geisha"
"This is SL9"	Too categorical if the profile is novel or only nearest to SL09	"Provisionally SL9-like; closest reported reference SL09"
"Inca Gesha"	Retainable as a disclosed local or historical name	"Locally/historically marketed as Inca Gesha"
Named producer, farm, harvest, and Peruvian origin	Unchanged if traceability supports them	Preserve the lot-level provenance fields
Recorded score, descriptor, award, or transaction	Unchanged if accurately sourced	Report protocol, date, lot, score, quantity, and price
"Gesha genetics caused this flavor or premium"	Unsupported without causal genotype and market designs	Describe measured cup and observed price without genetic causation

For a tested lot, a minimally adequate public description is: **Local name: Inca Gesha/Geisha Inca. Provisional genetic classification: SL9-like; reported closest reference SL09 and not authenticated as T2722 Geisha.** It should then state the producer, farm, harvest, lot identifier, tissue and tree sample, laboratory, method, report date and identifier, and a link to a redacted report. For an untested lot, the disclosure must say that related material has been reported as SL09-like but that the offered lot itself has not been authenticated (SEY Coffee 2026a, "About SL9"; Russell 2026; RD2 Vision n.d.).

For buyers and competitions, a variety field should carry an evidence status rather than a bare name: documented seed line, exact genetic reference match, compatible/cluster assignment, nearest reference, local name only, or untested seller declaration. This would preserve useful farmer knowledge without making every field appear laboratory-verified. Competition organizers should also retain historical labels in an audit trail when a record is corrected, because the 2018-2021 sequence shows that silent overwriting can erase how a claim evolved (Cup of Excellence 2018, 2020, 2021).

For researchers, the next study should begin with a pre-registered sampling frame rather than a retail bag. Multiple tagged trees per farm and multiple farms per local name should be sampled with custody records and blinded duplicates. Authenticated T2722, historical SL09 reference material, neighboring Ethiopian Legacy accessions, and unrelated controls should be run together, with loci, SNPs or sequence data, distances, thresholds, and quality controls published. Only then should verified plant groups enter multi-environment agronomic trials and factorial processing, roast, chemical, trained-panel, and consumer studies ([Privot-Woehl et al. 2020](#); [Montagnon et al. 2022](#); [Marie et al. 2024](#)).

Producer fairness requires that correction not be framed automatically as fraud. The global authentication literature identifies informal seed systems, cross-pollination, and good-faith label drift as common. Farmers may have received a name long before laboratories or specialty buyers became involved. A fair correction credits the producer's cultivation and quality achievements, preserves a disclosed local name where communities want it, and removes only the unsupported pedigree or causal claim ([Privot-Woehl et al. 2020](#), "Discussion"; [Russell 2026](#)).

Limitations and Research Agenda

The decisive direct limitation is the absence of the complete Peruvian laboratory report. The public record contains a detailed transcription attributed to one interpretive page, but not the report number, date, full sample identity, number of trees, custody, marker panel, allele calls, controls, reference accession, database version, distances, thresholds, or signatures. Accordingly, this paper can audit the public claim and its semantics but cannot reproduce the classification ([Feran 2026](#); [RD2 Vision n.d.](#)).

The historical reference record also remains incomplete. The 1993 CATIE catalog was lawfully downloaded and inspected as a 118-page scan, but this project did not reliably locate an exact page proving the often-repeated mapping of T.02730 to SL09. That mapping is therefore left unresolved rather than inferred from secondary repetition. Jones's 1956 description is direct for SL.9's selection history but leaves its source block unknown ([Morera et al. 1993](#); [Jones 1956](#), PDF pp. 11-12).

The paper's market chronology depends partly on mutable web pages. Current competition archives may have been edited, seller pages are snapshots, and retrospective company narratives are not contemporaneous reports. Feran's page displays a publication date of 2 January 2026; its top update block labels three items 7 January, 9 March, and 1 July **2025**, while corresponding headings lower on the page label the same months and days **2026**. This internal chronological inconsistency is preserved rather than silently harmonized. Web archives, original catalogs, invoices, test correspondence, and cooperative records could change the earliest defensible date for either the compound name or the SL-09 correction ([Feran 2026](#), header, update block, and lower update headings; [Counter Culture Coffee 2026](#); [Cup of Excellence 2020](#)).

No peer-reviewed direct agronomic or sensory study of authenticated Peruvian Inca Gesha/SL09 material was located. The null search is vulnerable to indexing, terminology, offline theses, and unpublished work; the closest local papers concern reported Typica and Catimor. Likewise, no market study isolates a label change on otherwise identical Peruvian lots. The paper therefore distinguishes “not located publicly” from “does not exist” and “not established” from “disproved” ([OpenAlex 2026a](#), [2026b](#); [Márquez-Romero et al. 2020](#); [Choque-Quispe et al. 2025](#); [Donnet et al. 2008](#)).

Priority work is straightforward but resource-intensive: publish the redacted report and sample manifest; de-duplicate alleged tests; authenticate reference plants; map the local name across farms and nurseries; collect documentary and oral histories independently of the genetic hypothesis; characterize verified trees morphologically; run replicated common gardens; and conduct multi-harvest sensory and chemistry experiments with standardized processes and blinded panels. A controlled auction, conjoint experiment, or archival natural experiment would be needed separately to estimate how a Gesha, Inca Gesha, or SL9 label changes willingness to pay ([Pruvot-Woehl et al. 2020](#); [Marie et al. 2024](#); [Ledezma et al. 2025](#); [Traore et al. 2018](#)).

Conclusion

Peruvian “Inca Gesha” is best understood today as a valuable but scientifically unresolved local and market identity. The strongest public genetic account concerns one leaf submission reportedly unlike RD2’s undisclosed Geisha comparator, very close to SL09, and not previously present as an exact fingerprint in the laboratory’s database. If that comparator was an authenticated T2722 reference and the sample custody was sound, the finding weighs strongly against a Panamanian-Gesha claim for the submitted tree. In the public record it supports the more cautious phrases **SL9-like** and **not authenticated as T2722**. It does not yet prove exact historical SL9, uniformity across farms and lots, or a route from Kenya to Peru ([Feran 2026](#); [Pruvot-Woehl et al. 2020](#); [Jones 1956](#)).

The agronomic and sensory identity remains open because direct studies of authenticated material are absent. Regional Cusco studies establish a high-elevation specialty-coffee landscape, while controlled comparator research shows that both genotype and the production chain influence floral and citrus expression. Tasting notes can describe a lot honestly but cannot authenticate it ([Comisión de Promoción del Perú para la Exportación y el Turismo 2019](#); [Márquez-Romero et al. 2020](#); [Choque-Quispe et al. 2025](#); [Marie et al. 2024](#); [Koyner et al. 2025](#)).

The historical and market record is clearer about claims than about biology. Gesha, dual Gesha/SL-09, SL-09, reverted Gesha, Inca Gesha, and provisional SL9 labels have all circulated, and named lots have achieved high scores and prices. Those facts survive reclassification; the causal pedigree story does not. The most defensible value proposition is consequently producer- and place-centered, lot-specific,

evidence-status-aware, and explicit about uncertainty (Cup of Excellence 2018, 2020; Alliance for Coffee Excellence 2024; SEY Coffee 2026a).

Evidence supporting SL9 thus changes validity selectively: the present report narrative weakens but cannot by itself fully invalidate a literal T2722 variety claim because its comparator and underlying data are undisclosed; an auditable nonmatch to authenticated T2722 would invalidate that claim for the tested tree. Geographic provenance remains independently testable, exact SL9 and introduction-route claims remain provisional, and value shifts away from borrowed pedigree toward verified cup quality, documented lot availability, traceability, producer work, and transparent disclosure. Publication of the full report and representative multi-farm testing could change that conclusion. Until then, “SL9-like, historically marketed as Inca Gesha; not authenticated as T2722” is the most accurate concise identity the public evidence permits (Feran 2026; Russell 2026; Fischer 2021).

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