

Public Comment Deadline: March 28, 2022

ASB Standard 078, Standard for Training in Forensic Autosomal Short Tandem Repeat (STR) Data and Y-STR Data Interpretation and Comparison

#	Section	Revised Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
59	General		T	The standard seems a little backward looking.	Provide more guidance on probabilistic thinking instead of emphasizing categorical conclusions.	Reject. Section 4.2.2.2 d) 3) covers probabilistic genotyping appropriate for this document.
76	General throughout document (specifically noted: 4.2.1 a, d; 4.2.2; 4.2.2.2 b, c, d; 4.3.1; 4.3.4; 4.4.1; 4.4.2; 4.4.3)		E	the stated requirements only cover interpretation but not comparison; critical to include both in the requirements for this standard	add "and comparison" to "interpretation" throughout the document; and please do search to see if it goes anywhere else that I missed catching	Accept
40	1		E	"This standard defines the minimum requirements to be met in a forensic DNA analyst training program for autosomal and Y-STR data interpretation and comparison. This standard excludes training for DNA sequencing." Inasmuch as DNA sequencing can be used to generate "autosomal and Y-STR data," the standard either does not fully define minimum requirements for interpretation of STR data. Or maybe it excludes sequence data as STR data, but the scope and limitations of the standard could be stated more clearly. The standard omits many other topics as well.	If the standard is limited to training in the interpretation of STR profiles as determined by PCR and capillary electrophoresis, that should be stated directly in the scope section..	Accept with modifications. Added "including the derivation of STR profiles from DNA sequencing data"
41	1		T	The standard does not discuss how to present the interetations in legal proceedings and does not address any other legal training for analysts. At least the former limitation should be noted in the statememntn of scope.	Note that the standard does not discuss how to present the interetations in legal proceedings.	Reject, presentation in legal proceedings in out of scope for this standard. Standard 154, : Standard for Training on Testimony for Forensic Biology
60	1		T	The current document is primarily a checklist of topics that must be covered in a training program, with little to no specificity regarding the substance of the training in each area. The document also does not address training in common sources of error or human factors in the interpretation of DNA data. The statement of scope needs to be clear that compliance with this standards does not ensure that the content of a training program is adequate.	Revise the Scope to clarify that this document defines a minimal list of training areas and topics that must be addressed in a training program. It does not address the substance of the required training within each topic area.	Accept with modifications. Changed "defines" to "outlines"
61	3		T	Many of the definitions in Section 3 conflate the actual (ground truth) properties of a DNA sample or a PCR reaction with the observed characteristics or patterns of peaks commonly associated with those DNA properties. A major human factors concern in any scientific training is training analysts to maintain a clear distinction between what they observe and what they infer based on those observations.	Draft definitions need to be reviewed and revised as need to clarify which terms refer to an underlying property of a DNA sample, molecular events in a PCR reaction, etc., and which terms refer to observable features of an electropherogram or analytical procedure. Suggested revisions for individual terms (below) are offered as examples, but we recommend that subject area experts review the definitions for all terms and revise as needed to address the general concern.	Reject, no proposed resolutions were provided. Modifications made to definitions based on other comments received. This provided clarification.
71	3.1		E	"a" in front of STR should be "an"	change "a" to "an"	Reject, a is grammatically correct
5	3.2		E	unneeded comma	remove comma after "or"	Accept with modifications, removed comma before "or"
72	3.2		E	commas around "or breakdown" and after "or" may not be necessary	consider deleting extra commas	Accept with modifications, removed comma before "or"

62	3.3		T	The proposed definition of "drop in" is unclear and potentially misleading. "Allelic peaks" is not defined, but appears to refer to peak on an electropherogram that correspond in size to the potential alleles at a particular locus. The proposed definition describes "drop in" as an observed difference between repeated amplifications of the same DNA sample (non-reproducible peaks). However, the term "drop in" is typically described as a type of PCR artifact, referring to a peak that does not accurately reflect amplification of an allele present in the original DNA sample. This standards needs to define whether "drop in" refers to an actual mismatch between the original DNA template and the PCR products, or to whether a peak is reproducible.	Clarify whether the term refers to the actual correspondence of electropherogram peaks to alleles in a DNA sample, or to occurrence of the same peaks in two PCR reactions. Define whether "allelic peaks" refers to any peak that corresponds in size to an expected allele, or to peaks that actually result from amplification of an allele present in the original sample.	Accept with modification, removed the word "allelic" Note: this definition is not in the OSAC lexicon
42	3.4		E	"Drop-out" is defined as "Failure of an otherwise amplifiable allele to produce a signal above analytical threshold because the allele was not present or was not present in sufficient quantity in the aliquot that underwent PCR amplification." Not present where? The allele had to presetrn somewhere to be "otherwise amplifiable." I would seem that the only thing one can say is that an allele is not present in sufficient quantity to be detected. The insufficient quantityt could zero, or it could be greater than zero.	Define "drop-out" as "The failure of an otherwise amplifiable allele to produce a signal above a desired threshold because the allele was not present in sufficient quantity in the aliquot that underwent PCR amplification."	Reject, this definition was copied from the OSAC lexicon
63	3.4		T	The proposed definition of "drop out" conflates an inference regarding the original DNA ("otherwise amplifiable allele") with an inferred mechanism (insufficient quantity of DNA) to explain an observation (absence of an exected allele from an electropherogram). Training in DNA interpretation needs to emphasize the distinction between observations, interpretations, and molecular mechanisms.	Need to clarify whether "drop out" refers to a failure to detect an allele that was present in the original DNA sample (one potential interpretation of PCR results), or to observations that could support such an interpretation ( very small sample, DNA degradation, etc).	Reject, this definition was copied from the OSAC lexicon
43	3.5		T	"Inclusion is defined as "A conclusion for which an individual cannot be excluded as a potential contributor of DNA obtained from an evidentiary item based on the comparison of known and questioned DNA profiles (or multiple questioned DNA profiles to each other); a statement of inclusion does not confirm that an individual is a source of the DNA." OSAC has asked that "conclusion" not be used in standards.	Define "inclusion" as "A determination that a specific individual cannot be excluded as a source of some or all of the DNA in a sample."	Reject, this definition was copied from the OSAC lexicon
44	3.5		E	"Inclusion is defined as "A conclusion for which an individual cannot be excluded as a potential contributor of DNA obtained from an evidentiary item based on the comparison of known and questioned DNA profiles (or multiple questioned DNA profiles to each other); a statement of inclusion does not confirm that an individual is a source of the DNA.:" But an individual whose DNA is in the sample may not have "contributed" it. It may have been taken surreptitiously.	Define "inclusion" as "A determination that an individual cannot be excluded as a source of one of all of the DNA in a sample."	Reject, this definition was copied from the OSAC lexicon
45	3.5		T	"Inclusion is defined as "A conclusion for which an individual cannot be excluded as a potential contributor of DNA obtained from an evidentiary item based on the comparison of known and questioned DNA profiles (or multiple questioned DNA profiles to each other); a statement of inclusion does not confirm that an individual is a source of the DNA.:" The dictionary definition oif "confirm" (Merriam-Webster) is "to make firm or firmer: strengthen." Surely an inclusion strengthens a source hypothesis—it is probative of identity. It is not neutral in its implications. It confoirms rather than disconfirms the hypothesis that the named individual is indeed the source of some or all of the DNA in the sample.	Define "inclusion" as "A determination that an individual cannot be excluded as a source of some of all of the DNA in a sample." If further discussion of the implications of an inclusion is necessary (which is doubtful), add that "An inclusion is not conclusive proof of the presence of the individual's DNA in the sample because of the risk of error in ascertaining rhe alleles and the possibility that other individuals could not be excluded."	Reject, this definition was copied from the OSAC lexicon
46	3.6		E	"Inconclusive" is defined as "A statement provided as the conclusion when testing results are insufficient or lacking in quality and/or quantity, as defined by the laboratory, for comparison purposes; the data are inadequate to draw any meaningful conclusions." The phrase "testing results are insufficient" is unclear. Insufficient in what respect other than quality or quantity?	Define "inconclusive" as "a determination that the samples or the test results are inadequate to draw any meaningful conclusions." (?) (Of course, OSAC has decreed that the word "conclusions" cannot be used in standards, but it seems appropriate here.)	Reject, this definition was copied from the OSAC lexicon

73	3.6		E	this definition is from the OSAC lexicon, but different from the one in Standard 139 [A determination that no conclusion (i.e., inclusion or exclusion) can be drawn from the comparison of reference data to evidentiary data. This could also result from statistical analyses that fail to provide sufficient support for an inclusion or exclusion.]	suggest replacing with the definition from 139, which is more comprehensive, and for consistency within DNA standards	Reject, this definition was copied from the OSAC lexicon
64	3.7		T	Need to clarify. The proposed definition refers to "the act of interfering" with DNA synthesis. In the context of PCR training, the relevant distinction is an active interference with the DNA polymerase by components of the test specimen vs other processes that can result in poor amplification (insufficient template DNA, inactive enzyme, instrument errors, etc).	Clarify what type of interference the term refers to and/or the context in which it is relevant to this training. Possible revision: interference with a DNA polymerase chain reaction by materials present in a specimen.	Accept with modification: Active interference with or prevention of the synthesis of DNA during the polymerase chain reaction (PCR).
6	3.8		E	"types" vague	change "types" to "alleles" (or genotype)	Reject, this definition was copied from the OSAC lexicon
47	3.8		E	The section defines "match" implicitly rather than explicitly, as "When used in a DNA testing report, a match refers to genetic profiles that show the same types at all loci tested in common; a match statement does not confirm that an individual is the source of the DNA." Why the restriction to reports? Does the word have a different meaning in testimony?	Define "match" as "The condition in which two STR profiles have exactly the same alleles at each locus."	Reject, this definition was copied from the OSAC lexicon
48	3.8		T	The characterization of a match ("a match statement does not confirm that an individual is the source of the DNA") is not a part of the definition, and it is inconsistent with the dictionary definition of "confirm" (Merriam-Webster) as "to make firm or firmer: strengthen." Surely a match strengthens a source hypothesis. It is not neutral in its implications. It is probative of identity. It disconfirms rather than disconfirms the hypothesis that the named individual is indeed the source of some or all of the DNA in the sample.	Define "match" as "The condition in which two STR profiles have exactly the same alleles at each locus." If it is necessary to add remarks (which is doubtful), one could say that "Like an inconclusive, a match is not conclusive proof of the presence of the individual's DNA in the sample because of the risk of error in ascertaining the alleles and the possibility that other individuals have matching alleles."	Reject, this definition was copied from the OSAC lexicon
49	3.9		T	"Mixture" is defined as "DNA typing results originating from two or more individuals." However, a mixture is a state of the world—a combination of DNA molecules from more than one individual in the same sample. A low-level mixture may not produce results that would let an analyst recognize it as a mixture, but it is mixture nevertheless.	Define "mixture" as "A combination of DNA from two or more individuals in the same sample."	Reject, this definition was copied from the OSAC lexicon
65	3.9		T	A DNA mixture generally refers to the (ground truth) fact that a DNA sample contains DNA from two or more individuals. The proposed definition converts the term to refer to the results of a PCR amplification, electropherogram, and assignment of genotypes based on an interpretation of those results. This conflates the analyst's conclusions with the ground truth being investigated.	Revise the definition to maintain a clear distinction between an actual mixture (DNA from two or more sources) and laboratory results and analysis that might lead an analyst to infer the presence of a mixture.	Reject, this definition was copied from the OSAC lexicon
50	3.10		E	"Mutation" is defined as "A change in DNA sequence; an alteration or change of an allele at a particular locus resulting in genetic inconsistency between a biological or cellular parent and offspring." The phrase "genetic inconsistency" is obscure. What makes the mutated allele "inconsistent"? How can there be an alteration that is not a change? How can there be a change other than a change in the sequence? Deletions, insertions, and substitutions all change the sequence of base-pairs within an STR allele.	Define "mutation" as "a change in the sequence of base-pairs in a genome. Mutations can consist of insertions, deletions, or substitutions of base pairs."	Reject, this definition was copied from the OSAC lexicon
51	3.11	Now 3.12	T	"Peak height ratio" is defined as "The relative ratio of two peaks at a given locus in a diploid heterozygous single-source sample." The ratio is a simple ratio, not a relative ratio (which would be a ratio of ratios).	Define "peak height ratio" as the ratio of the heights of two peaks in an electropherogram.	Reject, adopted OSAC lexicon definition
52	3.11	Now 3.12	T	"Peak height ratio" is defined as "The relative ratio of two peaks at a given locus in a diploid heterozygous single-source sample." The peaks do not have to represent two alleles in a sample from a single individual.	Define "peak height ratio" as the ratio of the heights of two peaks in an electropherogram.	Reject, adopted OSAC lexicon definition

66	3.11	Now 3.12	T	"Peak height ratio" refers to an observed feature of a DNA electropherogram, the ratio of the heights of two peaks. Determining whether the sample represents DNA from a single diploid individual who is heterozygous at that locus is an interpretation, which may be based on the peak height ratios. This conflates observations and interpretations or assumptions.	Peak height ratio: the ratio in height between two peaks on a DNA electropherogram. (If there are specific situations in which peak height ratios should or should not be used for analysis, a separate term is needed.)	Accept with modification, adopted OSAC lexicon definition
53	3.13	Now 3.15	E	"Stochastic threshold" is defined as "The peak height value in a DNA profile above which it is reasonable to assume that, at a given locus, allelic drop-out of a sister allele in a heterozygous pair has not occurred in a single source DNA sample." Is not a DNA profile the so-called genotype, which in the case of STR profiling is a list of the alleles at each locus?	Change "DNA profile" to "electropherogram."	Accept with modification, adopted OSAC lexicon definition
67	3.13	Now 3.15	T	"Stochastic threshold" is defined as a peak height "above which it is reasonable" to make certain assumptions. This conflates the operating determination of a threshold with the goal of choosing threshold that balances the risks of type I or type II errors when the threshold is applied in an analysis.	Revise the definition to distinguish the procedure or statistical criteria for defining a threshold from the policy goal of choosing a reasonable threshold for analysis.	Reject, adopted OSAC lexicon definition
68	3.14	Now 3.16	T	Need to clarify whether "stutter" refers to a biochemical process (a DNA polymerase either skips over or inserts repeated elements due to strand slippage) or to an observation that might be interpreted as an artifact based on that process (peaks one or two repeat units smaller or larger than expected alleles).	"Stutter" in molecular biology refers to the enzymatic process. "Stutter peaks" or "stutter pattern" might refer to a set of criteria that might be interpreted as artifacts because they can be explained by stutter.	Reject, adopted OSAC lexicon definition
74	3.15	Now 3.16	E	suggest an insertion for additional clarity	suggest inserting "the DNA profile of" between "in " and "one individual"	Reject, this definition was copied from the OSAC lexicon
17	4.1		T	The statement, "Based upon the laboratory procedures, some of the requirements in this section may be omitted from the training program" is vaguely worded.	Either delete or reword to be clearer, i.e. " The laboratory's training program shall include all requirements applicable to the work conducted by the laboratory and by the individual in training." (I borrowed and modified that language from Standard 022 4.2.2.)	Accept
22	4.1		E	Section 4.1 is different than in previously ASB published training standards.	Make this section as consistent as possible with other training standards.	Accept, added wording similar to standard 023
30	4.1		E	This section does not match 4.1 in previously published training standards.	Make all sections consistent throughout all training standards.	Accept
69	4.1		T	Section 4.1 provides a general authorization to omit "required" content from a training program "based upon the laboratory procedures. This guts any meaning to the claimed scope of "minimum" training requirements.	Delete 4.1 or provide specific criteria for omitting specific training requirements.	Accept
75	4.1		E	This statement only covers methods that are not relevant to the laboratory but should also include portions of testing conducted in the laboratory that the analyst is not being trained in. More inclusive language is suggested.	suggest replacing with "Some of the requirements in this standard may not be applicable depending on the types of DNA testing procedures used in the laboratory and/or the testing to be conducted by the analyst being trained. "	Accept with modification " The laboratory's training program shall include all requirements applicable to the work conducted by the laboratory and by the individual in training."
18	4.2		T	Cognitive bias is included in Std 022 but should be emphasized here as it relates to interpretation and comparison.	Add cognitive bias and effect on interpretation and comparison to knowledge based portion of training.	Accepted with modification to 4.2.1 (f) "literature on the effects of cognitive bias in decision-making processes associated with forensic DNA analysis. "
23	4.2.1		E	This section is missing a paragraph that was in previously ASB published training standards.	Make this section as consistent as possible with other training standards.	accept with modification, the standard was made consistent with published standards to the extent possible
31	4.2.1		E	Missing a paragraph that is in previously published training standards.	Make all sections consistent throughout all training standards.	accept with modification, the standard was made consistent with published standards to the extent possible
77	4.2.1 b		T	This probably needs more clarity such that the laboratory must define the "relevant" validation studies.	maybe change to something like "all of the validation studies relied upon by the laboratory to support the development of the interpretation and comparison protocol"	Reject, the working group feel that b. plus c. covers the same requirements succinctly

55	4.2.1(e)		E	"At a minimum, the knowledge-based portion of the training program shall require review of the following: ... e) applicable literature as assigned by the trainer." Subsection (e) is vacuous. It does not prescribe any minimum.	Delete (e)	Reject, retained language consistent with published standard 23 and others
54	4.2.2		E/T	What are "interpretation parameters"? It seems to be a technical phrase, but is not defined anywhere in the standard, and it does not seem to refer to the parameters of a statistical model.	Define "interpretation parameters" in § 3.	Accept with modification, changed "parameters" to "criteria"
70	4.2.2		T	Section 4.2 is essentially a checklist of topics the should be covered in training; 4.2.2 provides some general guidance on what should be covered for each topic. Missing from this section is an emphasis on the importance of training that addresses human factors and the potential effects of human judgment at each step in DNA analysis. At a minimum, training under each topic in section 4.2.2 should include awareness of results or conditions that increase the potential for error or misinterpretation and sources of uncertainty at each step in any analysis.	Add a sentence addressing human factors and an emphasis on sources of error as a training focus, e.g.:Training shall address the role of human judgment, sources of uncertainty, and conditions that increase the potential for error at each step in DNA analysis and interpretation.	Accept with modification, "The training shall also address documentation requirements of decisions made during the interpretation and comparison process, to include a basic understanding of the risks of bias and potential for human error." added to 4.2.2
78	4.2.2		E	Laboratories should be laboratory's	change "laboratories" to 'laboratory's"	Accept
79	4.2.2		E	the last sentence seems to be missing context as it applies to some of the topics	Suggest modifying to: The training shall include, at minimum, the application of the following topics to data interpretation and comparison listed in 4....	Reject, redundant to previous sentence
19	4.2.2.2		T	Sources of error, including false positives and false negatives should be part of knowledge based training. Additionally, effect of different assumptions (i.e. what if you misspecify NOC; what if you are off on mixture ratio) on interpretation and comparison should be emphasized.	Add wording to 4.2.2.2(d): how assumptions affect interpretation and conclusions. Add e) to 4.2.2.2: sources of false positives and false negatives	Reject, addressed in 4.2.2.2 d. 1) / Reject, outside the scope of this standard - addressed in standard 081
80	4.2.2.2		T	requirement is missing offscale data, data above detection threshold (saturation)	add offscale data; data above detection threshold	Accept with modification, added to 4.2.2.2 a) 7) "off-scale STR data" and added definition in 3.11
7	4.2.2.2a 6		E	"pref and dif amp" not defined	Define in section 3	Partial Accept, added definition for preferential amplification. Removed differential from 6)
8	4.2.2.2a 7		E	"microvariant" not defined	Define in section 3	Accept with modification. Defined Variant Allele and changed "microvariant" to "variant allele" in 7)
81	4.2.2.2 d) 2) v)		T	unclear how one would audit the "etc." part of the requirement	delete "etc"	Accept
20	4.2.2.2(d)(3)(iii)		T	what is a foreign component? Contamination? Any other contributor not major or minor?	Define foreign component or add note explaining it.	Accept " (i.e., alleles not belonging to an assumed contributor) " added
82	4.2.2.2 e		T	there is minimal context to this requirement	perhaps modify by adding something like "Use of the following terms in reports, oral communications and testimony for the ..."	Reject, covered under standard 080
1	4.2.2.2, e ii)		T	Unclear how the word 'consistent' differs from the word 'match', if at all	Consider putting a definition for 'consistent' or making this clarification in Terms & Definitions section or removing 'consistent' from 4.2.2.2, e ii)	Reject, covered under standard 080
33	4.2.2.2.2.vi		E	Data too limited/complex is redundant to 4.2.2.3 a and b	remove from 4.2.2.2.2.vi	Accept with modification, changed 4.2.2.2 a) 8) "data too limited and/or too complex"
34	4.2.2.2.4.iii		E	Statistics are covered in separate training standard.	remove from list.	Reject, intentional inclusion as a component of prob gen data interp
32	4.2.2.2.d		T	NOC, conditioning and ratios are not considered to be "limitations". These are considerations to be used during mixture interpretation and not limitations.	List these as separate requirements in 4.2.2.2.c and remove from limitations section.	Accept with modification , changed "limitations" to "Considerations" in d); added e) "limitations of mixture interpretation and comparison" as a new section
24	4.2.2.2d		T	Conditioning, NOC and ratios are not considered to be limitations.	Move these as separate requirements in 4.2.2.2c	Accept with modification , changed "limitations" to "Considerations" in d); added e) "limitations of mixture interpretation and comparison" as a new section
9	4.2.2.2d2i		E	comma missing	add comma after (first) "stutter" (stutter, including....)	Reject, section was removed due to redundancy to 4.2.2.2a

10	4.2.2.2d2iii		E	awkward phrase ("on")	consider adding "the effect of allele sharing on..." or similar	Reject, section was removed due to redundancy to 4.2.2.2a
11	4.2.2.2d2v		E	semicolon at end is inconsistent	make consistent with others	Reject, section was removed due to redundancy to 4.2.2.2a
12	4.2.2.2d2vi		E	period at end is inconsistent	make consistent with others	Reject, section was removed due to redundancy to 4.2.2.2a
25	4.2.2.2vi		E	Data too limited/complex is already listed under 4.2.2.3 a and b	Remove this section since it is already listed in 4.2.2.3.	Accept
13	4.2.2.3a		E	period at end is inconsistent	make consistent with others	Reject, section was removed and added to 4.2.2.2.a.8
15	4.3.1		E	I think this is a typo because there isn't a 4.12 in this document. I think this was intended to be 4.2.	Replace "4.12" with the clause that was intended.	Accept with modification. The section numbers were removed for simplification
26	4.3.1		E	4.12 should be 4.3.2-4.3.4	Change 4.12 to 4.3.2-4.3.4	Accept with modification. The section numbers were removed for simplification
35	4.3.1		E	Typo "4.12"	This should be 4.3.2-4.3.4	Accept with modification. The section numbers were removed for simplification
3	4.3.2		Technical/Clarification requested	Clarification requested if this is intended to be an observation of the procedure or requirement of the trainee to read the procedure. Based on the note, it seems to be observation, but with practice exercises.	The trainee shall observe the procedure from a seasoned analyst.	Accept with modification, added "observation with a trained analyst."
27	4.3.2		E	The Note is not used in previously published ASB training standards.	Make this section as consistent as possible with other training standards.	Accept
36	4.3.2		E	This note is not listed as a note in other published training standards.	Make consistent throughout all training standards.	Accept
83	4.3.2		E	It's unclear how a protocol can be observed and this requirement monitored in an audit	Suggest changing to "the use of the protocol..." or "the application of the protocol to DNA data..." or some similar language	Accept
4	4.3.4		Technical/Clarification requested	Clarification requested regarding manual and automated methods. I am assuming this is referring to binary vs. probabilistic genotyping, but in our laboratory we use these terms for manual vs automated platform amplification.	The number and quality of samples interpreted by the trainee shall include the binary and/or probabilistic methods, as applicable.	Accept with modification, "The number and quality of samples interpreted by the trainee shall include manual data review and automated data analysis methods, as applicable, including all validated software programs in use by the laboratory, as applicable."
84	4.3.4		T	in the last sentence, the requirement only covers results, but should also include interpretation and comparison of the results and their conclusions	add ", interpretation and comparison of the results and conclusions" to the end of the last sentence; could also consider deleting the word "results" since that is covered under the technology based standards and not directly applicable here	Accept with modification, deleted "and to produce reliable and accurate results"
16	4.4		T	The results of competency testing should be easily available.	Add a 4.4.4 that requires competency results to be easily accessible: "The results of competency testing for the analyst(s) involved in the case should be made available to all stakeholders."	Reject, Competencies are considered personnel records by many laboratories and are subject to agency specific policies. Competencies can be provided upon subpoena
21	4.4		T	The competency test should be performed on sample(s) representative of the range, type, complexity encountered in casework. Standard 022, 4.3.2(a)(2) does contain a requirement that a practical test on a lab's analytical procedure be performed on samples representative of the range, type, and complexity typically analyzed by the lab but that requirement is important enough to be repeated here.	Add language: "Practical competency tests shall include samples representative of the range, type, and complexity typically analyzed by the laboratory."	Accept, with modification - language added to 4.4.3: Samples representative of the range, type, and complexity for which the trainee will be authorized to interpret shall be included in the practical competency test.
37	4.4.1		E	Missing title of document for ASB 022	Add "Standard for Forensic Training DNA Analysis Training Programs"	Accept
85	4.4.1 & 4.4.2		E	knowledge-based or knowledge based?	use hyphen (or not) consistently	Accept
28	4.4.2		E	4.12 should be 4.2.	Change 4.12 to 4.2	Accept with modification. The section numbers were removed for simplification
29	4.4.2		E	This section is different than in previously ASB published training standards.	Make this section as consistent as possible with other training standards.	Accept with modification, also made changes to 4.4.3 for consistency
38	4.4.2		E	This section does not match 4.4.2 in previously published training standards.	Make all sections consistent throughout all training standards.	Accept with modification, also made changes to 4.4.3 for consistency

39	4.4.2		E	Typo "4.12"	This should be 4.2	Accept with modification. The section numbers were removed for simplification
56	4.4.2		T	The section "Knowledge-based Competency" states that "The trainee shall successfully complete a knowledge-based test covering the critical information obtained during the training of forensic autosomal and Y-STR data interpretation protocol(s). The format of the test(s) shall be at the discretion of the DNA technical leader or comparable authority. The test(s) shall cover, at a minimum, the topics outlined under 4.12." Beyond the minimum required topics, the section gives no guidance. What does "format" refer to: paper and pencil versus computerized? Essay versus multiple choice? Open-book versus book? Should the same test be given to all trainees?	Either delete the sentence "The format of the test(s) shall be at the discretion of the DNA technical leader or comparable authority." or list the permissible formats. Add something about the level of difficulty that the test must have.	Accept, sentence deleted
86	4.4.2		E	incorrect requirement number stated (no 4.12)	correct requirement number	Accept with modification. The section numbers were removed for simplification
2	4.4.3		T	Last sentence: "All types of samples..." is unnecessarily strict and vague at the same time.	Consider changing to less prescriptive and slightly more specific wording like "A representation of the range of sample types..."	Accept, with modification: Samples representative of the range, type, and complexity for which the trainee will be authorized to interpret shall be included in the practical competency test.
57	4.4.3		T	The section states "The trainee shall successfully complete a practical competency test covering each of the forensic autosomal and Y-STR data interpretation protocol(s) for which he or she will be independently authorized. All types of samples for which the trainee will be authorized to interpret shall be included in the practical competency test." How should the test be administered? Must it be same for all trainees? How difficult should it be? What level of performance is "successful"?	Develop this section in more detail to provide sufficient guidance.	Reject, this level of detail can be determined by the laboratory and/or technical leader
14	Bibliography		E	Hyphen (-) between page numbers	These should be n-dashes ( – ), not hyphens	Accept.
58	Bibliography		T	The bibliography seems dated and scattered -- particularly if it is supposed to include training in PGS! The readings associated with each topic in the body of the standard should be identified in the pertinent sections. That would greatly assist anyone seeking to create a training program.	Eliminate the bibliography and provide a list of recommended readings (classic or modern) on each required topic within the each topic section or subsection.	Reject, please provide specific changes as appropriate
87	Bibliography		E	this document relies heavily on validation studies and protocol	suggest adding Standard 018, 020 and 040 to the Bibliography	Partial accept, added standard 40. Bibliography is not intended to be all-inclusive
47	4.4 (comment brought over from comments on Draft Standard 091 for consistency)	4.4.1	T	This section should require that the criteria for passing a competency test be documented and established in advance.	Add a requirement that the criteria for passing should be documented and established in advance.	Accept, requirements added to 4.4.1 for all training standards