UC's vs. *Broad/MIT/Harvard*'s CRISPR-ETCIs & Supreme Court's Framework.

Part I: Aspects of Substantive Patent Law (SPL)*)

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I. Both Parties' Claims1 of these CRISPR-Patents Don't Satisfy SPL – being Improvable by Amendments.

For the first US patents on CRISPR-ETCIs[1.a)] – 10,000,772 B2 and 8,697,359 B1 – this mail shows scientifically:

- On the one hand, their both independent claims 1 don't meet several SPL requirements[b)], especially those stated by the Supreme Court in its reinterpretation of 35 USC §§ 101/102/103/112. Granting such SPL-deficient patents to the foreseeable large number of CRISPR-ETCIs would invite an endless sequence of large court cases[c)] – as the CRISPR business has the exciting potential to become the biggest money mover ever protected by SPL*) – what would finalize ruining investors' trust into the US NPS.[484]
- On the other hand, amending these claims from their specifications increases their potentials dramatically. I.e.: Both patents' specifications disclose for their ETCI1s – indeed being ^{n}PE[d)] – applications that, if being correctly used, transform these pairs <ETCI1, its such application> into PE and absolutely robust[354] CRISPR-ETCIs.

Section II starts explaining, why these two independent CRISPR-ETCI1s are ^{n}PE, by the commonly known *Myriad*-ETCIs: They are used[d)] as a kind of blue-print for demonstrating in Sections III/IV that each of these two CRISPR-ETCI1s' current meaning doesn't own two properties indispensable for its being PE: **A)** The first crucial but missing ETCI-property is that it is notionally not 'refined' (what the framework logically unquestionably requires for preciseness[2.b)]). And **B)**, the second ETCI-property lacking is that it does not comprise, for its exceptional ^{e}crC(s) – implied by its natural phenomena and/or abstract idea[b)] – an application[f)] that transforms this CRISPR-ETCI to PE. An ETCI without **B)** is ^{n}PE – also if **B)**-implied, as the simple *Myriad*-ETCIs explain.

Section V finally shows that the FSTP-Test guides to scientifically amend both ^{n}PE CRISPR-ETCI1 for their passing this test – which is amazingly supported by the IES[e.g. 443] – which equals to their satisfying the framework-based SPL.

Part II[489] clarifies a linguistic CRISPR/DNA-bridge between all the communities involved in patenting DNA-ETCIs – basically a rigorous clean-up, i.e. rationalization, of key-notions of today's wild DNA jargon (explained by both patents).

*) **The Part I of this mail scientifically clarifies the risks arising[484] for the US NPS from DNA- and/or CRISPR ETCIs[c)]. Its part II[489] – authored by the established Molecularbiologist Burghardt Wittig, FU Berlin[489] – clarifies & removes vaguenesses in present DNA/CRISPR-Cas9 patent-(application)s. Caused by such vaguenesses in CRISPR-related patent applications, 4.800 of them are pending at PTOs[487] – most of them worth >> 10++ Mio$.**

Both parts together recap the US patents' scientific requirements stated by the Supreme Court's framework to be met by ETCIs for their SPL-satisfaction. This holds also for CRISPR/DNA-ETCIs, then being of absolutely robust patent protection[354].

This enables a certainty about such ETCIs, i.e. about DNAtech, hitherto totally impossible! This DNAtech – based on the Supreme Court's framework (in cutting edge FSTP-Technology, comprising its IES-implementation[444]) – represents in any BIOtech area a true quantum leap.

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[1] **.a** This mail proves scientifically that both above quoted and different CRISPR-ETCIs, as being model-based indispensably being 'SPL-aware', cannot survive without correctly applying also the Supreme Court's framework: They therefore both will certainly be challenged, as indicated by*)[494], just as due to the additionally coming flood of (semi-) automatically[490] generated CRISPR patent applications (facilitated by FSTP-Technology's rationality).

The PTAB decision in the 2 patents' case (the UC's one equiv. replaced as there needed), just as its both parties' briefs to the CAFC, just as its decision[493] show their all unawareness of these scientific results. E.g., the obviousness question for an ETCI cannot arise if its PE is not assessed. I.e.: An ETCI may be determined as (non)obvious only iff it is PE – otherwise this enquiry is undecidable, i.e. is an invitation to waste time: The PTAB & CAFC decisions are correct by triviality.

This mail does not repeat all definitions of this framework-based SPL refinement and its implications' clarifications – as the Supreme Court repeatedly invited[e.g.458ftn1.c)] – by FSTP-mails. It assumes the reader's familiarity with the scientific clarification of the untenability (as legally erroneous) of the CAFC's and USPTO's interpretations of the Supreme Court's '**patent-eligibility**, **PE/^{n}PE**' definition in its *Alice* decision (as shown by FSTP-mails – especially the recent ones, drafted to be very short and nevertheless very easily comprehensible[456,459,468,470,477,479,480,483,484]).

.b that are indispensable for rendering these ETCIs[c)] as PE[a)]. I.e., they are ^{n}PE, as explained in detail in Sections IV/V. Each would namely erroneously patent several natural phenomena per se, as it doesn't comprise a basically independent application of them that would transform this ^{n}PE ETCI into a PE ETCI.

An item is called '**basically independent**' over a set, BIS, iff the item's meaning is by basic IDL[372] not construable of the meanings of the elements in BIS[2.b)]. Any natural phenomenon is totally preemptive, hence ^{n}PE[*Alice*]. Yet, if tied into an application basically independent of its ^{n}PE part, it is limited preemptive, i.e. PE[406].

.c as this would incentivize trying to leverage on their meanwhile well-known legal PE/^{n}PE problems, CRISPR-'**Emerging Technology Claimed Inventions**, **ETCIs**' then would render the US NPS as an el dorado.

.d For the Supreme Court decision about *Myriad*-ETCI1 (of a similar patent) and the CAFC's legally multiply erroneous decision about Myriad-ETCI7 see the next Section.

.e This limitation of an ETCI's application(s) would often bring this ETCI's patent in line with its e.g. FDA-approval. Thereby no credible authority would approve the feasibility of a drug's applications that it claims (or which even only later were claimed feasible) if it could not have first verified that these applications deserve this feasibility approval. Nevertheless, today the patent legislation is confronted with this far reaching expectation by parts of the patent community – as indeed by POs often practiced in the past.

.f being disclosed by the specification of the ETCI's patent and there also truly enabled (just as all crCs), basically independent of its so caused ^{n}PE.

II. Decisions about *Myriad*'s ETCIs – by the Supreme Court of 13.06.2013 and CAFC of 17.12.2014.

This Section shows[1.a)]: The *Myriad*-ETCI1 of Patent US 5,753,441 is ⁿPE, while its *Myriad*-ETCI7 is PE[2.a)].

Upfront: Each DNA-ETCI's SPL satisfaction test principally deals with ●a testee's '**subject matter**', ●a '**marker**' comprising **.)**a **detector** of a (non)modification of this matter and **:)**an **indicator/signaler** to a user of this detection's meaning, and – therein involved, yet not in this indicator – ●a '**natural phenomenon**' and/or '**an abstract idea**'.[b)]

The ⁿPE subject matter of *Myriad*-ETCI1 has 3 ETCI-elements: **X1::=** TestedTissue, **X2::=** Wildtype, **X3::=** Detector&Indicator[b)] of alteration of a BRCA1 gene, the properties of which are: **EcrCS::= e1::=** S(equence)o(f)$^{t(estee)t(issue)}$B(RCA)1g(ene)●, **e2::=** So^{tt}B1R●, **e3::=** So^{tt}B1c●; **e4::=** So^{w}B1g●, **e5::=** So^{w}B1R●, **e6::=** So^{w}B1c●; **e7::=** detect(diff(e1,e4) ∨ diff(e2,e5) ∨ diff(e3,e6))●, **e8::=** in(dicate)de(tect)(e7)●.

O1 ::= MUI1 ∧	**A1Pred::= E1Pred::=**	(So^{tt}B1g ∨ So^{tt}B1R ∨ So^{tt}B1c)	alias (e1 ∨ e2 ∨ e3) ∧
∧ **O2 ::= MUI2** ∧	∧ **A2Pred ::= E2 Pred::=**	(So^{w}B1g ∨ So^{w}B1R ∨ So^{w}B1c)	alias (e4 ∨ e5 ∨ e6) ∧
∧ **O3 ::= MUI3**;	∧ **A3Pred::= E3Pred::=**	(diff(e1,e4) ∨ diff(e2,e5) ∨ diff(e3,e6)) ∧ inde(e7).	alias (e7 ∧ e8). [SectionV]

Of these 8 EcrCs of the *Myriad*-ETCI1, e1-e3 are E^{e}crCs due to their embodied 'natural phenomena'; e4-e6 & e8 are nonexceptional crCs as from databases. e7 is a basic DNAtech-function being an [(e)]application of {e1,…,e6} indicated to the user by e8, hence an invention. ETCI1 is by *Alice* rendered ⁿPE – as e7 is basically depending on {e1,…,e6}, thus not transforming ETCI1 into significantly more than {e1,…,e6}[1.b)].

The ⁿPE subject matter of *Myriad*-ETCI7 is identical to that of *Myriad*-ETCI1, yet its e7 is replaced by a much smarter 'marker', modeled by e7°[d)]. I.e., e7° is a basically independent application of {e1,…,e6}, as not basically derivable from {e1,…,e6}. Thus, e7° is in *Myriad*-ETCI7 an "**inventive (*Alice*) concept**, **in**^{Alice}**C**" and transforming the ⁿPE invention {e1,…,e6} "into significantly more than {e1,…,e6}". As *Alice* requires, *Myriad*-ETCI7 also preserves the nature of *Myriad*-ETCI1, as changing nothing of it.

This is the blueprint for our brains in interpreting basic and/or CRISPR&DNA-ETCIs, i.e. for their FSTP-KRs. I.e., it shows the structure of these ETCIs' simplest models, and its rudimentary "**use-hierarchy**"[c)] (as introduced in the 70s into IT System Design[2] by[278] and today in IT being one of the 2 all overarching & indispensable complexity structuring philosophies[c)]).

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[2] **.a [claim 1]:** *"A method for screening germline of a human subject for an alteration of a BRCA1 gene which comprises COMPARING germline sequence of a BRCA1 gene or BRCA1 RNA from a tissue sample from said subject or a sequence of BRCA1 cDNA made from mRNA from said sample WITH germline sequences of wild-type BRCA1 gene, [or] wild-type BRCA1 RNA or wild-type BRCA1 cDNA, wherein a difference in the sequence of the BRCA1 gene, [or] BRCA1 RNA or BRCA1 cDNA of the subject from wild-type INDICATES an alteration in the BRCA1 gene in said subject* **[**, **claim 7]** *wherein a germline nucleic acid sequence is COMPARED by HYBRIDIZING a BRCA1 gene probe [–] which specifically hybridizes to a BRCA1 allele [– WITH] genomic DNA isolated from said sample and DETECTING the presence of a hybridization product, wherein a presence of said product INDICATES the presence of said allele in the subject."* **[all mark-ups added for facilitating parsing it correctly]**

.b Increasing the preciseness: Therein being involved ●one or several 'elementary exceptional creative concept(s), E^{e}crC(s)' and ●one or several 'elementary, non-exceptional and not necessarily creative concept(s), E(n)crC(s)', and ●the indicator being at least one E(n)crC and being basically (non)independent[1.b)] of the ETCI's ⁿPE subject matter. Thus the claim interpretation of a DNA-ETCI is highly speculative![470ftn4.b)], i.e. legally erroneous, if it lacks one of these notions.

Thus, any ETCI is ⁿPE if its EcrCS (defining this ETCI, see Section VI) comprises no E(n)crC basically independent of EcrCS\{E(n)crC}.

.c As indicated already, two cognitive/notional complexity structuring alias disaggregation techniques have been developed in System Design[2] for getting a latter's complexity under control – '**layering of functionality**' and '**separation of concerns**' – for getting the description of the complexity of systems under the control of human brains' capacity. By its framework decisions, the Supreme Court induced (to the FSTP-Project) applying these structuring techniques – today in IT systems ubiquitously used – also in the legal systems of ●35 USC/SPL on the one hand and on the other hand of ●testing ETCIs for their meeting this SPL's requirements.

.1 "Layering of functionality": As induced by their both namings, 'layering' of complexity provides horizontal complexity structuring, while 'separation' provides vertical structuring of complexity – in both cases by encapsulating (and thus hiding) parts of the system's complexity into their structures' compounds. In functional layering these compounds are usually called 'modules', in separation of concerns these compounds are here called 'concepts'. Thereby concepts are subject to any patent's O/A/E- and IDL-description-layering structures, as explained earlier respectively in Sections III-VI. Thus, e.g. e7° is DNA-IDL-based – i.e. not only basic-IDL-based. I.e.: {DNA-IDL}\{basic-IDL}**::=** {"**DNAtech functions**", e.g. 'allele, hybridize, gDNA,...'}**.**

The definition of 'basic independent' is based on only basic-IDL and basic DNAtech functions e.g. 'diff, altin,…' – i.e. not on non-basic DNA-IDL. This specific layering of the IDL-functionality must not be mixed up with any ETCI's O/A/E-layering in its specification and its SPL-test.

Finally: DNAtech is here assumed to be deterministic – while in truth it is chaotic as often probability-free non-deterministic[182] – implying that scope(basic-ETCI), scope(DNA-ETCI), scope(CRISPR/DNA-ETCI) are constant, too.

.2 "Separation of concerns": Not separating the basically independent elementary concerns – modeled by elementary concepts – of 'detecting an alteration of a subject matter' and 'indicating a detection's result to the user' from each other as the USPTO's PE-guideline and the CAFC do, and instead batching these both concepts together into a single compound concept – in spite of their being separated notions in DNAtech and its carefully drafted claims' wordings – contradicts both concepts' sufficiently refined notional resolutions of their meanings for enabling *Alice's* 'search' for a rational 'inventive concept', as required by *Alice's* PE-analysis. I.e.: Instead of disaggregating this compound meaning – in both *Myriad*-ETCIs even without naming it. – into its elementary notions of rational meanings, a metaphysic compound notion is preserved, which disables finding a rational 'inventive concept'.

.d By[1.b)], the amended e7 (= e7°) is basically independent of ETCI1, as it reads in DNA-IDL[3.a)]: "e7°**::=** ^{allele}So^{tt}B1g ∈^{hybrid}(SoB1g^{probe} **&** (^{isol}gDNA⊂SoB1g^{sample}))".

III. DNA- / CRISPR- / SEQU- / CART- / …-IDLs – for all DNA- & CRISPR-Innovation Communities.

The simplicity of the "**Innovation Definition Language**, **IDL**" and its DNA-extensions[3.a)] is demonstrated
●by the specification of 2 *Myriad* DNA-ETCIs and the 2 CRISPR-ETCIs in Section II respectively IV, and
●by the SPL-satisfaction test, the FSTP-Test, of any type of ETCIs in Section V. I.e.: IDL's role in SPL-satisfaction testing of DNA-ETCIs is here only briefly mentioned – as an ETCI's SPL-test does not care about this ETCI's subject area aspects, but is evidently focused on its SPL-aspects. On the other hand, also all CRISPR/DNA aspects' details of ETCIs are postponed to part II of this mail.

Thus, this page focuses on creating awareness in all communities involved – in using an CRISPR/DNA-IDL – as to 3 crucial points about their venturing into uncharted territory. Thereby, 3 concerns[278] must be kept clearly separated: **I.)** The notional structuring of IDL-extensions, and the peculiarities of its use in a CRISPR/DNA-ETCI's **II.)** specification and/or interpretation and **III.)** SPL-satisfaction.

Ad I): **<u>The notional structuring of IDL-extensions</u>.** The 'Basic IDL' has been introduced and discussed in[e.g.372]. Its simplicity is in Part II of this mail layer-wise[2.c.1)] expanded to "**basic DNA-IDL**" and then to "**CRISPR-IDL**" for dealing with DNA-ETCIs ex- or including CRISPR[b)].

Due to the huge sub-areas comprised by techniques of CRISPR and/or basic DNA, sub-area-specific layers on top of basic DNA- and CRISPR-IDL will rapidly emerge – e.g. SEQU/DNA-IDL and SEQU/CRISPR-IDL, for brevity "**SEQU-IDL**", for sequencing such DNA- and/or CISPR-ETCIs. SEQU-IDL will in particular introduce the notions of "**virtual sequences**", "**virtual sequencing**", … and related context-sensitive "**virtual memory**" techniques.

Another CRISPR-IDL layer would be 'CRISPR Modified CAR T-Cells', for brevity "**CART-IDL**"[487].[b)]

Ad III): **<u>The use of such IDLs in testing & robusting[c)] ETCIs for SPL-satisfaction</u>.** As the III. concern is today much easier to explain than concern II, it is dealt with first. It namely suffices to remind that an ETCI satisfies SPL iff it passes the FSTP-Test, independent of the kind of ETCIs concerned.

Ad II): **<u>The use of such IDLs in specifying & interpreting ETCIs</u>.** Everybody who ever specified or interpreted a nontrivial DNA-ETCI knows how tedious this often is, due to two since long time from automatic language translation known problems, worsened by a phenomenon caused by resp. IDL extensions and non-familiarity with them[d)]:

- The meanings of the terms[453ftn3.b)] therein (to be) used or available are often not that exactly specified – on the basis of the whole specification of this ETCI's patent(application) – as necessary for excluding any misinterpretation or mis-/non-understanding.
- Within a claim's wording its references are not uniquely resolved, also causing its misinterpretation or mis-/non-understanding.
- In basic IDL's extensions by CRISPR/DNA functionality, terms may irritate as belonging to claims' meta- and/or object-language[b)]. Part II of this mail will – besides concerns **I.)** and **II.)** – clarify also problems caused primarily by the aspect under **III)**.

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[3] **.a** The very urgent need of this IDL-based 'innovation bridge' or 'communications tool' exists already for a common understanding of only the 'framework-based SPL' and the more for additionally understanding DNA-ETCIs, and the more for SPL-testing DNA-ETCIs, and … The reason being that without a complete mutual understanding across borders of all the involved but mentally vastly disjoint communities' – of the same professional area or of different ones – it is hard to notice and fully get aware of the meanings of notions to be commonly understood, unless chaos is accepted.

The need of this common and fully understanding of the 'IDL philosophy' is absolutely indispensable for automizing by deterministic AI[2] testing CRISPR/DNA-ETCIs for satisfying SPL, i.e. for guaranteeing their being absolutely robust – what the FSTP-Project's cutting-edge 'Innovation Expert System, IES' for all kinds of ETCIs is enforcing by the FSTP-Test already today, but only for ETCIs' <u>legal</u> SPL satisfaction, i.e. not for <u>factual</u> SPL statements[457].

As usual in technologically highly developed environments, only few of their 'high potentials' need to fully understand them. I.e., FSTP-Technology in IDL is designed such that the bulk of its users would just enjoy its simplicity, even in its subtleties – without needing understanding its theoretical foundation.

Finally, all CRISPR/DNA extensions of IDL are based on the respective international CRISPR/DNA state-of-the-art developments. I.e., only SPL and basic IDL is US-minded, as no national NPS has hitherto been adjusted by its legislature to the needs of model-based inventions. Internationally only the Supreme Court hitherto recognized these needs of the bulk of inventions driving innovations in all areas of emerging technologies.

.b SEQU-IDL and CART-IDL are not yet issues in this email, but the specifications of the *Myriad-/UC-/BroadMIT*-ETCIs in Sections II/IV/V are written already in gross forerunners of DNA-IDL and CRISPR-IDL – elaborated on in[489] – i.e. are already metarational[468ftn1.b)]. They will by[457] exemplarily be rationalized, as all DNA and SPL notions' semantics – classic as well as semiotic ones – will be defined mathematically (as indispensable for integrating AI for automating most of the SPL-based patent business), while their original wordings are still metaphysical or at least metarational.

That thus all claims by IDL get stereotypic is not a loss of culture but a gain in '**innovation professionalism**' – socio-economically indispensable.

.c While 'SPL-testing an ETCI' has the meaning to find out whether it may fail meeting the requirements the Supreme Court has stated for its being patent-eligible and patentable, the – here defined – semiotic term/notion of '**SPL-robusting an ETCI**' has the meaning to achieve by its wording and to guarantee that its patent cannot be destroyed by SPL. I.e.: This ETCI cannot be shown to fail to meet a framework-based SPL requirement.

.d even worsened, if an IDL-extension is not used, as then potentially all terms in the claim's wording may belong to its meta- or object-language.

IV. The *UC*- and *Broad/MIT/Harvard* CRISPR-ETCI1s are nPE – Amendments may Satisfy SPL.

Next[4.a)] 1.) and 2.) scientifically state that both patents are nPE yet may be fixed such that they satisfy US/SPL[c)].

Their following 'FSTP-KRs' are aiming at linguistic triviality and redundancy excluding non-unique references for error detection and avoiding misunderstandings/-interpretations in an ETCI's specification – whereby this is facilitated by the UI of the IES to a degree enabling its automatic robustness verification. Below, both claims' original wordings are left unchanged.

1.) The *UC* ETCI1 is a method (of modifying a target DNA molecule), based on **N::= 6** ETCI-elements: **X1::=** a target DNA molecule, **X2::=** a target sequence with **a** complex, **X3::=** a Cas9 protein, **X4::=** a DNA-targeting RNA, **X5::=** a targeter RNA, **X6::=** an activator RNA – having the **K::= 12** resp. E-properties:

(e1,1 = EcrC1 =) e1::= is contacted outside of all bacterial and archaeal cells● ∧ **(e1,2 = EcrC2 =) e2::= having** a target sequence with a complex●;;
(e2,1 = EcrC3 =) e3::= comprising a Cas9 protein● ∧ **(e2,2 = EcrC4 =) e4::= comprising a** DNA-targeting RNA● ∧ **(e2,3 = EcrC5 =) e5::= comprises** a targeter RNA●;;
(e3,1 = EcrC6 =) e6::= comprised by a target sequence with a complex●;; **(e4,1 = EcrC7 =) e7::= comprised by** a target sequence with a complex ●;;
(e5,1 = EcrC8 =) e8::= comprised by a DNA-targeting RNA●∧ **(e5,2 = EcrC9 =) e9::= hybridizing with** the target sequence●;;
(e6,1 = EcrC10 =) e10::= comprised by a DNA-targeting RNA●∧ **(e6,2 = EcrC11 =) e11::= hybridizing with** the targeter-RNA to form **a** dsRNA duplex of a protein-binding segment● ∧ **(e6,3 = EcrC12 =) e12::= hybridizes with** the targeter-RNA to form a total of 10 to 15 base-pairs resulting in modification of the target DNA molecule●.

O1::= MUI1 ∧	**A1Pred::= E1 Pred::=** (e1 ∧ e2)	∧
∧ **O2::= MUI2** ∧	∧ **A2Pred::= E2 Pred::=** (e3 ∧ e4 ∧ e5)	∧
∧ **O3::= MUI3** ∧	∧ **A3Pred::= E3 Pred::=** e6	∧
∧ **O4::= MUI4** ∧	∧ **A4Pred::= E4 Pred::=** e7	∧
∧ **O5::= MUI5** ∧	∧ **A5Pred::= E5 Pred::=** (e8 ∧ e9)	∧
∧ **O6::= MUI6**	∧ **A6Pred::= E6 Pred::=** (e10 ∧ e11 ∧ e12).	

2.) The *Broad/MIT/Harvard* ETCI[b)] is a method (of altering an expression of at least one target gene product), based on **N::= 7** ETCI-elements: **X1::=** introducing into a cell, **X2::= a** DNA molecule, **X3::=** a target sequence, **X4::=** the gene product, **X5::=** 1 or several vectors, **X6::=** the guide RNA, **X7::=** Cas9 protein – having **K::=10** E-properties:

(e1,1 = EcrC1 =) e1::= being eukaryotic● ∧ **(e1,2 = EcrC2 =) e2::=** containing and expressing a DNA-molecule● ∧
(e2,1 = EcrC3 =) e3::= having a target sequence● ∧ **(e2,2 = EcrC4 =) e4::=** is encoding the gene product, being a CRISPR-Cas system●;
(e3,1 = EcrC5 =) e5::= comprised by a DNA-molecule●; **(e4,1 = EcrC6 =) e6::= comprising** one or several vectors●;
(e5,1 = EcrC7 =) e7::= comprising a first regulatory element operable in a eukaryotic cell operably linked to at least one nucleotide sequence encoding a CRISPR-Cas system guide RNA that hybridizes with the target sequence● ∧ **(e5,2 = EcrC8 =) e8::= comprising** a second regulatory element operable in a eukaryotic cell operably linked to a nucleotide sequence encoding a Type-II Cas9 protein●; **(e6,1 = EcrC9 =) e9::= targets** the target sequence●; **(e7,1 = EcrC10 =) e10::= cleaves** the DNA molecule.

O1 ::= MUI1 ∧	**A1Pred::= E1 Pred::=** (e1 ∧ e2)	∧
∧ **O2 ::= MUI2** ∧	∧ **A2Pred::= E2 Pred::=** (e3 ∧ e4)	∧
∧ **O3 ::= MUI3** ∧	∧ **A3Pred::= E3 Pred::=** e5	∧
∧ **O4 ::= MUI4** ∧	∧ **A4Pred::= E4 Pred::=** e6	∧
∧ **O5 ::= MUI5** ∧	∧ **A5Pred::= E5 Pred::=** (e7 ∧ e8)	∧
∧ **O6 ::= MUI6** ∧	∧ **A6Pred::= E6 Pred::=** e 9	∧
∧ **O7 ::= MUI7**	∧ **A7Pred::= E7 Pred::=** e10.	

Just as for the (former) *Myriad* ETCI1 patent, also the specifications for *UC's* and *Broad/MIT/Harvard's* patents disclose applications of their nPE ETCI1s that enable, as seen scientifically, to amend their claim1s for transforming them into PE. Yet, it depends on the involved Highest Courts whether such amendments may be taken from their depending claims.[5.c)]

4.a **[*UC*-claim1]:** *"A method of modifying target DNA molecule, the method comprising: contacting a target DNA molecule having a target sequence with a complex comprising: (a) a Cas9 protein; and (b) a DNA-targeting RNA comprising: (i) a targeter-RNA that hybridizes with the target sequence; and (ii) an activator-RNA that hybridizes with the targeter-RNA to form a double-stranded RNA (dsRNA) duplex of a protein-binding segment, wherein the activator-RNA hybridizes with the targeter-RNA to form a total of 10 to 15 base-pairs, wherein said contacting takes place outside of a bacterial cell and outside of an archaeal cell, thereby resulting in modification of the target DNA molecule.*

.b **[*Broad/MIT/Havard*-claim1]:** *"A method of altering expression of at least one gene product comprising introducing into a eukaryotic cell containing and expressing a DNA molecule having a target sequence and encoding the gene product ~~an~~? engineered, non-naturally occurring […] CRISPR-Cas system comprising one or more vectors comprising: a) a first regulatory element operable in a eukaryotic cell operably linked to at least one nucleotide sequence encoding a CRISPR-Cas system guide RNA that hybridizes with the target sequence, and b) a second regulatory element operable in a eukaryotic cell operably linked to a nucleotide sequence encoding a Type-II Cas9 protein, wherein components (a) and (b) are located on same or different vectors of the system, whereby the guide RNA targets the target sequence and the Cas9 protein cleaves the DNA molecule, whereby expression of the at least one gene product is altered; and, wherein the Cas9 protein and the guide RNA do not naturally occur together."*

.c After a second look at the FSTP-KRs (see Section V) of this *UC* ETCI1, the above *Myriad* ETCI7, and the below *Broad/MIT* ETCI1 one recognizes the ●stereotypicy of the KR of any DNA-ETCI and CRISPR-ETCI, its ●simplicity (and redundancy for assessing its correctness and already syntactically excluding non-unique references, as by its automatic processing in different semantical areas alias 'contexts' is indispensable), and ●that all three don't satisfy (the framework-based) SPL, as being nPE because of their missing properties **A)** & **B)** from page 1.

Thereby post-*KSR* holds: The for patent law key notion of "**POPOSC**, **person of pertinent ordinary skill & creativity**" (before the Supreme Court's *KSR decision:* "**PHOSITA, person having ordinary skill in the art**") is in CRISPR inapplicable, as no such person exists, worldwide – as such ordinary skill does not yet exist in CRISPR. I.e. such context does not exist in CRISPR and then SPL requires that the interpretation of a CRISPR claim's wording must be performed context free. Thus, for interpreting both patents in contextfree (i.e. EBNF-describable) English – not in their different murky contexts of current CRISPR jargon indicated by **a)** & **b)** (commented on in Part II) that the PTAB and the CAFC discussed[491,493] in a questionable/pragmatic way, anyway non-scientifically – this author needed the help of Burghardt Wittig.

Both patents' such notional deficiencies have nevertheless nothing to do with their lacking of **A)** & **B)** from page 1, scientifically rendering them legally invalid.

V. FSTP-Test of a DNA-ETCI for its Satisfying 35 USC §§ 101/102/103/112 – in Basic IDL's ^{rat}KR & ^{mat}KR.

The following FSTP-Test-KRs (in rat. and math. KR, copied from[483]) test by line1-6, for a DNA-ETCI[5.a)], whether it meets the requirements determined by §§101/112, and on top of them by line7-9 this ETCI's being (non)anticipated by prior art as determined by §§102/103, both requirements in detail stated by the Supreme Court's framework, especially the latter's PE-analysis. General explanations concerning the FSTP-Test are provided by[b)].

<^{rat}CI::= rational claim interpretation in: rational KR = post-*MBA*-KR = refined claiming KR^{rat} = FSTP KR^{rat}> input ∧ begin:
ETCI is a set of 'O-crC0S^{mphys}::= {O-crC0n ::= *IDL-sentence,* disclosed by O-MUIS0n^{mphys} ::= {n-*IDL-sentences*^{mphys}},1≤n≤N} ∪
∪ ∪
∪ E-crC0S^{rat} ::= {E-inC0k ∨ E-ninC0k ::= *IDL-sentence*, disclosed by E-MUIS0k^{rat} ::={k-*IDL-sentences*^{rat},1≤k≤K}.'
1) if [∀(E-crC0nk ∨ E-ncrC0nk) are lawfully_disclosed – including its TT0 and E-cr^{Alice}C(s) – as???] then go on;
2) If [{O-crC0n=∧$^{1≤k≤Kn}$(E-inC0nk ∨ E-ninC0nk), ∀1≤n≤N ∧ Σ$^{1≤n≤N}$ K^{n} = K} is enablingly disclosed as???] then go on;
3) If [COM(ETCI) is (E-definite∧E-complete∧uniquely_defined∧useful) as???] then go on; output COM(ETCI^{rat}) ∧ stop.

<^{mat}CI::= mat claim interpretation in: mathematical KR = post-*MBA*-KR = refined claiming KR^{mat} = FSTP KR^{rat}> input ∧ begin:
ETCI is a set of 'O-crC0S^{mphys} ::= {O-crC0n = *IDL-sentence*, disclosed by O-MUIS0n^{mphys} ::= {n-*IDL-sentences*^{mphys}} ∪
∪ ∪
∪ E-crC0S^{mat} ::= {E-inC0k ∨ E-ninC0k = *IDL-sentence* disclosed by E-MUIS0nk^{rat} ::={k-*IDL-sentences*^{rat}},1≤k≤K} ∪
∪ E-crC0S^{mat}_DEF::= {E-inC0k ∨ E-ninC0k axiomized mathematically by *IDL-sentences*^{math}, 1≤k≤K}.
1) If [∀(E-crC0nk ∨ E-ncrC0nk) are lawfully_disclosed – including its TT0 and E-in^{Alice}C(s) – as???] then go on;
2) If [{O-crC0n=∧$^{1≤k≤Kn}$(E-inC0nk ∨ E-ninC0nk), ∀1≤n≤N ∧ Σ$^{1≤n≤N}$ K^{n} = K} is enablingly disclosed as???] then go on;
3) If [COM(ETCI) is (E-definite∧E-complete∧uniquely_defined∧useful) as???] then go on; output COM(ETCI^{mat}) ∧ stop.

^{rat}CC::= input 'COM(ETCI)^{rat} ≡ O-/A-/E-inC0S' ∧ begin:
4) if [COM(ETCI) comprises an nPE TT0 as???] then go on;
5) if [COM(ETCI) is an application of TT0's nature as???] then go on;
6) if [COM(ETCI) is significantly more than TT0 as???] then go on;
7) if [COM(ETCI) comprises only independent E-inC0nk as???] then go on; [input COM(RS)^{rat} ≡ O-/A-/E-inCnS, 1≤n≤N]
8) if [COM(ETCI) has a definite A/N-Matrix over RS as???] then go on;
9) if [COM(ETCI) has sem. height(RS ≥1/≥2 if AC$^{1/≥2}$ ∈ RS) as???] then go on; output 'COM(ETCI)^{rat} satisfies SPL' ∧ stop.

^{mat}CC::= input 'COM(ETCI)^{mat} ≡ O-/A-/E-inC0S'∧begin:
4) if [scope(E-crCS^{TT0}) ≠$^{+}$ Φ] then go on;
5) if [∏∏^{TT0}scope(E-crCS^{ETCI}) ⊆ ∏ (E-crCS^{TT0})] then go on;
6) if [(E-crCS^{Alice} ≠ Φ)] then go on;
7) if [∀ϵ{E-crC0nk | 1≤n≤N ∧ 1≤k≤K^{n}} are independent of each other] then go on; [input COM(RS)^{mat} ≡ O-/A-/E-inCnS, 1≤n≤N]
8) if [∀^{i,n,k}∃Δ^{i,n,k} ::= if (E-crCink = E-crC0nk) 'A' else 'N'] then go on;
9) if [∑$^{1≤n≤N}$ (min$^{∀i∈[1,I]}$ I{<Δ^{i,n,1}="N", ..., Δ^{i,n,Kn}="N">}I)≥2] then go on; output 'COM(ETCI)^{mat} satisfies SPL' ∧ stop.

As DNA-technology in its current form is as ET very young, compared to CTs, in the OAE-layering philosophy[2.c.1)] the A-layer is still superfluous. Hence in the above FSTP-Test-KRs their A-lines may be skipped. But this changes nothing with the indispensable refinement of a DNA-ETCI's E-layer for achieving the notional preciseness that the Supreme Court must require by its framework for enabling consistency in court decisions about ETCIs' being PE/^{n}PE – today unfortunately still not understood by the patent community. About this PE-disaster, a brief statement may be helpful: This Solomonic PE-decidability criterion in favor of ETCIs by the Supreme Court would have been liked by the decidability scholar Gödel – and hence by his tight friend Einstein, who very highly appreciated his scientific work.

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[5] **.a** The name "ETCI" does not yet tell whether it satisfies SPL or not. The prefix "^{e}" of the name of an exceptional concept is often left away.

.b **Line1-3:** There are 2 independent reasons, why the PE-analysis implies, for each ETCI, the mandatory disaggregation of any of its compound incremental creative concepts into the latter's conjunction of elementary/atomic incremental creative concepts. Namely, its compound concepts fail meeting the requirements to ●consider of any ETCI its elementary creative concepts often indispensable for determining their basic independence[1.b)], and ●achieving the minimal invasitivity into the pre-framework's higher freedom of inventivity. **Line 4:** The semiotic meaning of the term "≠$^{+}$ Φ" is that scope(E-crCS^{TT0}) either comprises an abstract idea and/or a natural phenomenon – each modellable by an exceptional creative concept, i.e. not being too speculative for eventually being rationalizable/mathematizable (thus preserving the perspective of its scientification). **Line 5:** The semiotic meaning of the term "∏∏^{TT0}scope(EcrCS^{ETCI})⊆∏(EcrCS^{TT0})" is scope(EcrCS$^{ETCI\&TT0}$) is ≤ scope(EcrCS^{TT0}), i.e. TT0's application doesn't exceed scope(EcrCS^{TT0}). **Line 6-7:** The semiotic meaning of the term "∀ϵ{E-crC0nk | 1≤n≤N ∧ 1≤k≤K^{n} are independent of each other}" is that scope(E-crCS^{ETCI}) notionally – by the potential of elementary logic[e.g.372] – does exceed scope(E-crCS^{TT0}).[1.b)]

.c Moreover, the Supreme Court clearly emphasized in the final statements in its *Myriad* decision: "*Judge Bryson aptly noted that '[a]s the first party with knowledge of the [BRCA1 and BRCA2] sequences, Myriad was in an excellent position to claim applications of that knowledge. Many of its unchallenged claims are limited to such applications*'" **[mark-ups added]** — thus explicitly hinting already at the PE-analysis that the Supreme Court would shortly thereafter deliver through its *Alice* decision.

The CAFC hence knew this unmistakable opinion of the Supreme Court about the PE-question (as the CAFC even conceded in its *Myriad* opinion on p. 18), but nevertheless deviates from this Supreme Court opinion by flatly countering this evident hint "*…, nowhere in the opinion did the Supreme Court express approval of the individual claims identified by Judge Bryson, …*".

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[2] AIT: "Advanced Information Sciences & Technologies" or "Artificial Intelligence Technology" denotes cutting edge IT areas, e.g. Knowledge Representation(KR)/ Description Logic (DL)/ Natural Language (NL)/ Semantics/ Semiotics/ System Design/… just as MAI & MKR: "Mathematical Artificial Intelligence & Mathematical Knowledge Representation", i.e. the resilient fundament of AI, AIT, and "Facts Screening/Transforming/Presenting, FSTP"-Technology, both developed here.— currently much of the latter still in a 'status nascendi'[182]

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