UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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SECURITIES AND EXCHANGE COMMISSION,   :

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        Plaintiff,   :   20 Civ. 10832 (AT) (SN)

    :

    - against -   :   ECF Case

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RIPPLE LABS, INC., BRADLEY GARLINGHOUSE,   :
and CHRISTIAN A. LARSEN,   :

    :

        Defendants.   :

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**PLAINTIFF SECURITIES AND EXCHANGE COMMISSION'S
BRIEF IN OPPOSITION TO DEFENDANTS' MOTION
TO EXCLUDE THE TESTIMONY OF ██████████**

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Plaintiff Securities and Exchange Commission ("SEC") respectfully opposes Defendants' Motion to Exclude the Testimony of Dr. ███████ Ph.D. (D.E. 540). For the reasons set forth below, the Court should deny Defendants' motion.

PRELIMINARY STATEMENT

███████ is a world-renowned scholar on decentralization of distributed systems, with nearly 20 years of academic and practical experience. The asset at issue in this case, XRP, exists on one such distributed system, or "blockchain," called the XRP Ledger. ███████ testimony is highly relevant to rebut Defendants' claims that the XRP Ledger is "decentralized," which Defendants have made a focal point of their defense—both inside and outside the courtroom—to the claim that Ripple offered and sold XRP as a security. ███████ is uniquely qualified to explain technical computer science concepts to a lay jury, including what decentralization means, how this concept applies to the XRP Ledger, and Ripple's crucial (and centralized) role in the XRP Ledger's operation.

Acknowledging none of this, Defendants mischaracterize ███████ testimony, cherry-picking statements from his deposition while omitting relevant context. Defendants also parrot their own unqualified expert's views on the relevant academic literature. These arguments, along with the remainder of Defendants' critiques, go (at most) to the weight that should be afforded ███████ testimony and do not provide a basis for exclusion.

BACKGROUND

I.   ███████ **Experience**

███████ holds a Ph.D. in distributed systems from ████████████████████ ████████████████ Expert Report of Dr. ███████ (updated Jan. 25, 2022) ("███████ Rep.") (D.E. 542, Ex. A), at 3. He has 18 years of specialized experience in the area of computer science (fault-tolerant distributed systems) that is "at the core" of decentralized systems. *Id.* ███████ expertise focuses on creating computer software algorithms that function across a network

of computers (a distributed system), and evaluating the capability of such algorithms to fend off malicious actors from disrupting the functioning of the system (fault tolerance). *Id.*

███████ defended his Ph.D. thesis on distributed computing systems████████████ ███████ *Id.* at 3-4. He has taught distributed systems courses at multiple universities, including as a tenured faculty member. *Id.* at 4. While he was an ███████████████████, he co-invented a new blockchain and received the highest technical award at ███ for this contribution. *Id.* ██████ frequently serves as an invited speaker at prestigious blockchain conferences and workshops regarding decentralized systems. *Id.* He is the author of numerous research papers and patents, and his scientific work has been cited more than 6,000 times. *Id.*

II. ████████ **Opinions**

████████ offers three expert opinions. First, after explaining the meaning of "decentralization" as applied to blockchain technology like the XRP Ledger, and adopting a basic definition of decentralization from accepted scientific literature, *id.* at 8-11, ██████ opines that the XRP Ledger does not satisfy this basic definition, and that it is less decentralized than the Bitcoin and Ethereum blockchains. *Id.* at 22-25. In providing this opinion, ██████ defines a decentralized system as one "where multiple authorities (parties) control different system components and no authority is fully trusted by all." *Id.* at 5. Relying on the relevant scientific literature, he identifies four main aspects of decentralization useful for comparing the relative decentralization of various blockchains: resilience, inclusiveness, in-protocol incentives, and governance, *id.* at 5, 9-11, which he then applies to the Bitcoin and Ethereum blockchains and the XRP Ledger.

Second, ██████ explains that Ripple's efforts have been necessary to support the proper operation of the XRP Ledger. *Id.* at 25-26. ██████ explains that Ripple publishes on its website a default list of trusted "validators" (computers operating on the distributed system that "validate" transactions on the XRP Ledger), and that the XRP Ledger software that Ripple's founders created

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defaults to this list when downloaded from the Internet (the "default unique node list" or dUNL). *Id.* at 5, 25.

A user can select any list of XRP Ledger validators to trust (not just Ripple's list), but as Ripple's Chief Technology Officer testified, in order for the XRP Ledger to function correctly, there must be a very high degree of overlap of trusted validators on users' lists, and the Ledger historically has relied on Ripple's published list that contains validators vetted by Ripple. *See* Schwartz Dep. at 139:17-22, 148:23-149:21 (Ex. A)[1] (explaining that for the XRP Ledger to function properly, there must be between 80% and 90% overlap on trusted validator lists); *see also* ▮▮▮▮ Rep. at 25; Adriaens Rep. (D.E. 548, Ex. 11) ¶ 45. For most of the time since the XRP Ledger's public launch, Ripple controlled all or most of the validators on its default list, and at all times was solely in charge of *which* validators were listed. ▮▮▮▮ Rep. at 25-26 & Figure 1; Schwartz Dep. at 191:15-192:19.

Finally, ▮▮▮▮ opines that, if Ripple "walked away" from its role with respect to the XRP Ledger, "serious risks" related to its correct operation may arise. ▮▮▮▮ Rep. at 26-27. ▮▮▮▮ explained that, if XRP Ledger users continued to use Ripple's default list of trusted validators, and those validators controlled or funded by Ripple ceased to operate after Ripple "walked away," the XRP Ledger would cease to function. *Id.* If users instead chose to abandon Ripple's trusted list, they would be faced with two choices: select their own trusted validator lists individually, risking insufficient overlap among their lists for the Ledger to function correctly; or use ordinary human communication to create a new default list, defeating the purpose of a distributed system that aims to implement distributed consensus without the need for such collaboration. *Id.* at 27.

III.   Ripple's Reliance on the XRP Ledger's Purported Decentralization as a Defense

In June 2018, the then-Director of the SEC Division of Corporation Finance gave a speech in which he noted that if a digital token's entire ecosystem—*i.e.*, the network of users, developers,

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[1] "Ex. __" refers to exhibits attached to the accompanying Declaration of Mark R. Sylvester.

and market participants with respect to the digital token and its functions—was sufficiently

dispersed, such that neither the network's operation nor its native token was concentrated in the

hands of a few identifiable actors, then the Division may not consider offers and sales of the digital

token relating to that ecosystem to be securities transactions.[2] D.E. 541 at 3. The speech does not

address the technical aspects of a *blockchain's* functioning or centralization; instead the speech refers

to the *entire ecosystem* that exists around a digital asset.[3] *See* Speech ("If the network on which the

token or coin is to function is sufficiently decentralized – where purchasers would no longer

reasonably expect a person or group to carry out essential managerial or entrepreneurial efforts – the

assets may not represent an investment contract.").

Since at least Director Hinman's speech, which Defendants allege caused them "confusion"

(D.E. 172 at 22-23), and as part of a larger strategy to avoid a determination that XRP is a security,

Defendants have executed a media strategy centered on the claim that the XRP Ledger is

purportedly decentralized and therefore XRP cannot be a security. *E.g.*, Mem. (July 5, 2018), at 1,

11-12 (Ex. B) (Ripple's "high-stakes public strategy firm" providing talking points regarding

decentralization of the XRP Ledger for use in Garlinghouse's meetings with "key members of the

media and influencers from the policy community" in Washington, DC); Email (July 17, 2018) (Ex.

C) (Ripple employee proposing publications to Ripple's public relations firm, noting "the

decentralization message" was part of Ripple's "Why We Believe XRP is Not a Security" argument);

Email (June 20, 2018) (Ex. D) (Ripple's marketing employee stating: "Ideally, we want to tell the

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[2] Digital Asset Transactions: When Howey Met Gary (Plastic), William Hinman, Director, Division of Corporation Finance (June 14, 2018), *available at* https://www.sec.gov/news/speech/speech-hinman-061418 ("Speech").

[3] Though Director Hinman stated that the ecosystem for the Ethereum *token* was a decentralized system, the SEC has brought enforcement actions arguing that sales of tokens that exist on the Ethereum *ledger* (ERC-20 tokens) are securities. *E.g.*, *SEC v. Kik Interactive Inc.*, No. 19-cv-5244 (S.D.N.Y. June 4, 2019), Complaint ¶ 80, *available at* https://www.sec.gov/litigation/complaints/2019/comp-pr2019-87.pdf.

story that if you believe bitcoin and ethereum are decentralized, then the facts point to the XRP

Ledger also being decentralized."). As part of this campaign, Ripple has argued that, if it ceased to

exist, the XRP Ledger would continue. *E.g.*, Email (July 20, 2018)(Ex. E) (Ripple's marketing

employees and public relations firm proposing response to a reporter's question "Is XRP a

security?": "[T]he XRP Ledger is decentralized…and XRP would continue to exist even if Ripple

disappeared tomorrow – that doesn't look like a security to me."); Email (Feb. 25, 2019) (Ex. F)

(Ripple employees discussing *Fortune* editor's response to draft by Larsen and Ripple's CTO, in

which they wrote: "Decentralization: If Ripple vanishes, XRP and the XRP Ledger will persist.").

Similarly, Ripple has argued from this case's start that, because the XRP Ledger is

purportedly decentralized, XRP cannot be a security. *See* Ripple's Amended Answer (D.E. 51) ¶¶

13, 39 (asserting that the "economic realities of XRP" include "that the XRP Ledger is entirely

open-source, decentralized, and operates…outside of Ripple's control"). Indeed, Defendants' fair

notice defense explicitly cites the Speech for supposedly telegraphing to market participants that

XRP was not a security. D.E. 51 at 98; D.E. 462 at 98; D.E. 463 at 104; *see also* D.E. 257 at 3-4

(asserting Director Hinman's remarks on decentralization were "relevant to claims and defenses in

this case" (cleaned up)). Defendants even offer their own expert, Peter Adriaens, to opine that the

XRP Ledger is decentralized. *See* D.E. 548, Ex. 11 ¶ 21 (opining as to the "decentralized nature of

the XRP Ledger"); ¶¶ 41, 45, 48 (opining that the XRP Ledger features "decentralized validation" of

network transactions). Simply put, Defendants have thrust decentralization into this case,

demonstrating the relevance of ███████ opinions about the decentralization of the XRP Ledger,

including as compared to the Bitcoin and Ethereum blockchains.

LEGAL STANDARD

In deciding a motion to exclude expert testimony, courts first evaluate "whether a witness is

'qualified as an expert by knowledge, skill, experience, training, or education' to render his or her

opinions." *Fin. Guar. Ins. Co. v. Putnam Advisory Co. LLC*, 2020 WL 4251229, at *2 (S.D.N.Y. Feb.

19, 2020) (quoting *Nimely v. City of New York*, 414 F.3d 381, 396 n.11 (2d Cir. 2005)). If the expert is

qualified, courts determine whether his testimony is reliable and will assist the jury. *Id.* at *2-3.

Exclusion is warranted only when there are "serious flaws in reasoning or methodology."

Nationwide Mut. Fire Ins. Co. v. Sunbeam Prods., Inc., 2014 WL 3875844, at *2 (S.D.N.Y. July 17, 2014).

As long as there are "good grounds" for an expert's testimony, "it should be tested by the adversary

process," not excluded. *CFTC v. Wilson*, 2016 WL 7229056, at *7 (S.D.N.Y. Sept. 30, 2016) (citation

omitted). Disputes as to an expert's "credentials, faults in his…methodology, or lack of textual

authority for his opinion, go to the weight, not the admissibility, of his testimony." *McCullock v. H.B.*

Fuller Co., 61 F.3d 1038, 1044 (2d Cir. 1995)).

ARGUMENT

I.   ███████ **Opinions as to Decentralization of Distributed Computer Systems Are Reliable.**

Defendants first claim ███████ opinions are unreliable because there is no accepted

definition of decentralization in computer science, repeating the claims of their expert, Adriaens.

Compare D.E. 541 at 1, 4-7, *with* Adriaens Rebuttal (D.E. 548, Ex. 13) ¶¶ 4-9. This attack is meritless.

First, Defendants have already conceded that there *is* a definition of decentralization: they

have offered an expert who defined it. *See* D.E. 548, Ex. 11 ¶ 43. Indeed, Adriaens' definition of

"decentralization"—which he claimed appears in "a lot of crypto sites" and "book chapters" (D.E.

548, Ex. 12, 293:18-294:5)—is perfectly consistent with ███████ definition of decentralization,

adopted from a scientific paper authored by Professor Troncoso. *Compare* D.E. 548, Ex. 11 ¶ 43

("In blockchain, decentralization refers to the transfer of control and decision-making from a

centralized entity (individual, organization, or group thereof) to a distributed network…. [T]he

purpose of decentralized validation is to avoid one party having outsized control over another to

make a network decision (to validate a transaction).") *with* ███████ Rep. at 5 ("decentralized systems"

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are "a subset of distributed systems where multiple authorities (parties) control different system components and no authority is fully trusted by all").

Second, Defendants ignore ▬▬▬ specialized qualifications. ▬▬▬ is not just any "computer scientist." D.E. 541 at 4. He is one of the world's foremost experts in blockchain, with nearly 20 years of experience examining protocols relevant to decentralized systems. ▬▬▬ Rep. at 4. As such, he is uniquely suited to synthesize the relevant scientific literature and identify both the minimum requirement for a system to be considered "decentralized" and the primary characteristics of decentralization—precisely the exercise he undertook to form his opinions in this case. *Id.* at 5. *See United States v. Tin Yat Chin*, 371 F.3d 31, 40 (2d Cir. 2004) (courts must "compare the area in which the witness has superior knowledge, education, experience, or skill with the subject matter of the proffered testimony").

As ▬▬▬ explained, there *is* consensus in the computer science literature as to the "basic or minimum definition" or "necessary definition" in order "for a system to be considered decentralized"—the Troncoso definition set forth in his Report. *See* ▬▬▬ Tr. (D.E. 542, Ex. B) 46:6-11 (noting the Troncoso paper "systemizes 15 years of research in decentralization, and comes up with a definition of decentralized systems"); *see also id.* at 115:2-118:6; 140:13-143:5; 147:20-25. Defendants' contrary reading of the literature, D.E. 541 at 4-7, is based on the opinions of an environmental engineering and business professor, who conceded he does not have the technical expertise necessary to evaluate decentralization. D.E. 548, Ex. 12, 167:25-168:18; 172:4-175:16; 177:11-18; 191:9-193:20; 202:23-204:6.

Accordingly, Defendants at most identify a dispute among experts as to the appropriate conclusions to draw from the relevant scientific literature.[4] This is not a basis to exclude ▬▬▬

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[4] The Court should not permit Adriaens to rebut ▬▬▬ testimony, for the reasons set forth in the SEC's omnibus motion to exclude Defendants' expert testimony. D.E. 536 at 23-29.

testimony. *See In re Joint E & S Dist. Asbestos Lit.*, 52 F.3d 1124, 1135 (2d Cir. 1995) ("Trial courts

should not arrogate the jury's role in evaluating the evidence and the credibility of expert witnesses

by simply choosing sides in the battle of the experts." (citation omitted)). And challenges to "the

existence or number of supporting authorities" for an opinion go to weight, not admissibility.

Guardino v. Alutiiq Diversified Servs., LLC, 457 F. Supp. 3d 158, 162 (N.D.N.Y. 2020).

II.   ███████   **Reliably Selected and Applied His Methodology for Evaluating and Comparing the Decentralization of Bitcoin, Ethereum, and the XRP Ledger.**

Defendants next argue that ███████ decentralization opinions are unreliable because he (i)

supposedly "substantially abandoned" at his deposition three of the four main aspects of

decentralization identified in his Report, *see* D.E. 541 at 6-8; (ii) was "biased" in selecting these

criteria; and (iii) should have considered other factors. *Id.* at 7-14. These arguments are meritless.

A.   ███████   **Did Not "Abandon" Decentralization Factors.**

Defendants' "abandonment" argument mischaracterizes ███████ opinions. ███████

decentralization opinions answer two questions: (1) Is the XRP Ledger properly considered a

decentralized system?; and (2) How does the XRP Ledger compare with the Bitcoin and Ethereum

blockchains as to the main aspects of decentralization? ███████ Rep. at 3, 28. ███████ used the

"precise *minimal definition* of a decentralized system"—"a distributed system where multiple

authorities (parties) control different system components and no authority is fully trusted by all"—to

answer the first question in the negative. *Id.* at 5, 28 (emphasis added). For the second, ███████

applied the main aspects of decentralization (beyond the minimal definition) he identified in the

scientific literature—resilience, inclusiveness, in-protocol incentives, and governance—to evaluate

the relative decentralization of the Bitcoin and Ethereum blockchains and the XRP Ledger. *Id.* at 9

("Beyond the above basic definition of a decentralized system, computer science literature considers

multiple aspects of decentralization in an attempt to refine and characterize its nuances, as well as

the differences among decentralized systems."); *id.* at 15-19, 22-25.

Defendants conflate the second question with the first, arguing that, because ██████

testified that the three aspects do not necessarily answer the question of "whether a blockchain is

decentralized," he must have "abandoned" or "renounced" them. D.E. 541 at 6, 8. But ██████

never claimed those aspects answered the question of whether a *single* system is decentralized (the

first question)—he only asserted that they are the "most relevant" for comparing *multiple* systems

(the second question). *See* ██████ Rep. at 9-11, 28.

B. Defendants' Baseless "Bias" Attack is Meritless.

Defendants' only ostensible basis for their assertion that ██████ selection and application

of his criteria was "biased" is ██████ ████████████ D.E. 541 at 7-12. Defendants never

explain why ████████ would "bias" anyone towards arguing that one blockchain is more

decentralized than the other. Nor does their "bias" argument explain why ██████ would select

criteria that would evaluate the Ethereum blockchain as more decentralized than the XRP Ledger.

Moreover, Defendants concede that ██████ published a peer-reviewed article advocating

use of the same four aspects to evaluate the relative decentralization of multiple distributed systems.[5]

This publication demonstrates the reliability of ██████ methodology. *See Daubert v. Merrell Dow*

Pharms., Inc., 509 U.S. 579, 594 (1993) ("[t]he fact of publication" is "relevant" to "assessing the

scientific validity of a particular technique or methodology on which an opinion is premised"). It

also refutes Defendants' suggestions that ██████ selected his criteria to disfavor the XRP Ledger.

C. Defendants' Remaining Arguments Go to Weight, Not Admissibility.

Defendants' remaining attacks, that ██████ should have considered an additional factor or

should have applied the factors he did consider differently, *see* D.E. 541 at 8-12 & n.11, go to the

weight of his testimony, not its admissibility, and in any event are meritless. *See Guardino*, 457 F.

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[5] Although Defendants assert it is "unclear" whether his article was "scientifically peer-reviewed,"
D.E. 541 at 7 n.8, ██████ testified that it was peer reviewed by two computer science professors,
whom he identified by name and academic institution. ██████ Tr. 178:5-179:9.

Supp. 3d at 162 (disputes concerning "an expert's use or application of her methodology… go to the weight, not the admissibility of her testimony" (citing *McCullock*, 61 F.3d at 1044)).

For example, Defendants argue that ▇▇▇▇ should have considered the "network layer" when comparing the decentralization of Bitcoin, Ethereum, and the XRP Ledger. D.E. 541 at 8-9. This mischaracterizes ▇▇▇▇ Report, which discusses the "network layer" as an "additional aspect" of decentralization, ▇▇▇▇ Rep. at 11, and his testimony. He explained that his analysis considered, but did not focus on, the "network layer" because all three systems are decentralized at the network layer in that they all operate on the wide area Internet, ▇▇▇▇ Tr. 205:9-207:23, noting the XRP Ledger is likely less decentralized than Bitcoin or Ethereum at the network layer under the criteria adopted by a scientific paper Defendants cite.[6] Had ▇▇▇▇ included a comparison of the "network layer" aspect in his Report, this would not have advantaged the XRP Ledger vis-à-vis the other two systems: the XRP Ledger likely would have fared worse.[7] ▇▇▇▇ Tr. 206:9-24. In any event, claims that an expert failed to consider data should be addressed on cross-examination. *Henkel v. Wagner*, 2016 WL 1271062, at *11 (S.D.N.Y. Mar. 29, 2016).

Repeating Adriaens's opinions, Defendants argue that ▇▇▇▇ should have credited their allegations regarding the XRP Ledger's purported advantages—"that it is faster, cheaper, and far more environmentally friendly than other blockchains"—and then agreed that these constitute incentives to participate in the XRP Ledger, that ▇▇▇▇ purportedly did not consider. D.E. 541 at 10-11 & n.9; *see* D.E. 548, Ex. 13 ¶ 36. ▇▇▇▇ did consider "out-of-protocol incentives," but

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[6] A.R. Sai et al., *Taxonomy of Centralization in Public Blockchain Systems: A Systematic Literature Review*, 58 Info. Processing & Mgmt. 102584 (Mar. 31, 2021) (D.E. 542, Ex. E) ("Sai"); *see* D.E. 541 at 4 n.4, 5 & n.5, 9, 11 (citing Sai).

[7] Although Defendants argue that "[o]perating over the public Internet is evidence that a blockchain is decentralized," D.E. 541 at 9, it is clear that a system could operate over the public Internet—e.g., a cloud computing provider's distributed system—without satisfying the "minimal definition" of decentralization, ▇▇▇▇ Rep. at 5, because the system's nodes could be switched off at the instruction of one actor, the provider.

determined that in-protocol incentives were more important as a decentralization aspect because

they provide a much stronger economic rationale to join a system.[8] ▮▮▮▮ Rep. at 10-11. This is

another cross-examination point—not a basis for exclusion.

Defendants next argue that ▮▮▮▮ erred by failing to consider the expense of mining in

assessing his second aspect, inclusiveness, in light of his assumption that there is a "global 'free

market' for computing power."[9] D.E. 541 at 11; D.E. 548, Ex. 13 ¶ 33. Defendants seek to

substitute their (or their expert's) judgment for ▮▮▮▮ who opines that "inclusiveness" requires

that any participant have an equal role to other participants, provided she "makes the same

investment in system resources." ▮▮▮▮ Rep. at 9-10. ▮▮▮▮ thus concludes the XRP Ledger is

less inclusive than Bitcoin and Ethereum because "a few participants handpicked by Ripple have

special status (which stems from their inclusion in a dUNL), and the other participants merely

follow the commands of these special participants." *Id.* at 23. Defendants' disagreement with

▮▮▮▮ expert conclusions is not a basis for exclusion. *See In re Visa Check/Mastermoney Antitrust*

Litig., 192 F.R.D. 68, 78 (E.D.N.Y. 2000) ("The gravamen of defendants' motion is that they (and

their expert) disagree with Carlton's conclusions; that is not a basis for exclusion.").

Defendants further contend that ▮▮▮▮ used a biased methodology for his final factor,

governance, to calculate ownership control for Ethereum. D.E. 541 at 11; ▮▮▮▮ Rep. at 19. But

▮▮▮▮ methodology is drawn from the scientific literature. *See* ▮▮▮▮ Rep. at 11 (citing Sai). In

fact, ▮▮▮▮ calculation of Ethereum's ownership control of "about 10%," ▮▮▮▮ Rep. at 5,

closely approximates the same figure, 11%, calculated by Sai. *See* Sai at 14.

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[8] Defendants again selectively quote ▮▮▮▮ without the necessary context. D.E. 541 at 10. ▮▮▮▮
merely noted that comparing Bitcoin miners and XRP validators was "not an apples-to-apples
comparison" and that it was "not necessarily fair to call [XRP Ledger validators] miners" because
miners are rewarded for their work on the Bitcoin blockchain and validators on the XRP Ledger are
not similarly rewarded. ▮▮▮▮ Tr. 281:14-282:12.
[9] This is a non sequitur. The existence of a "free market" does not guarantee that every activity is
affordable for every market participant.

Defendants' assorted remaining attacks—lumped into a footnote—either misread his Report or ignore relevant testimony.[10] D.E. 541 at 11 n.11. None of these purported defects provides any basis for exclusion. *See Buchwald v. Renco Grp.*, 539 B.R. 31, 40 (S.D.N.Y. 2015) (rejecting challenges to expert's methodology, concluding that "any errors or portions of [the expert's] opinion that were under explained" were appropriate grounds for cross-examination, not preclusion).

III. ████████ Opinion, Identifying Ripple's Efforts That Have Been Required for the Correct Operation of the XRP Ledger, Is Reliable.

████████ identified the efforts Ripple needed to undertake to support the proper functioning of the XRP Ledger, including: (i) publication of a default list of trusted validators (dUNL); (ii) continued curation of the validators that appear on the dUNL; and (iii) maintenance of security over the validators that it controls that appear on the dUNL. ████████ Rep. at 25-26. ████████ also observed that, from the XRP Ledger's inception until 2018, Ripple controlled 100% of validators on the dUNL, and, as of the time of the Report, validators controlled by or funded by Ripple exceeded the percentage on that list necessary to effectuate changes to the XRP Ledger. *Id.*

Defendants do not dispute Ripple's historical control over validators on its default trusted list, the dUNL. Instead, they argue that ████████ assessment of Ripple's necessary efforts is flawed because he supposedly reviewed the wrong computer code. D.E. 541 at 12-14.

Defendants first argue that the version of the XRP Ledger code that ████████ examined is both too old (because it is not the version in place today) and too new (because it is not the version

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[10] ████████ considered a hypothetical single-actor attack on the Bitcoin and Ethereum blockchains, concluding such an attack was not possible because more than one actor would be needed to compromise those blockchains. *See* ████████ Rep. at 15, 18 & Table 1. He explained that his assessment of "partition tolerance" for the Bitcoin blockchain would not affect his opinion. *See* ████████ Tr. 252:10-253:4. He considered the "double-spend problem" in the context of the XRP Ledger. *See* ████████ Rep. at 20-21. Had he compared the "operational decentralization" of the XRP Ledger with that of the Bitcoin and Ethereum blockchains, the XRP Ledger would have fared worse. *Id.* at 13-14, 18; ████████ Tr. 356:11-23. And he acknowledged that the XRP Ledger is "open-source software," noting in his report that the XRP Ledger's software is publicly available at the cited website. ████████ Rep. at 20.

in place at the time of the Complaint's allegations). Defendants fail to mention that the relevant

code portions ▮▮▮ reviewed are materially identical to prior versions in place during the period

of the Complaint's allegations. ▮▮▮ reviewed the XRP Ledger's software version 1.7.3 and

found that it defaults to a single UNL list hosted by Ripple at vl.ripple.com. ▮▮▮ Rep. at 7, 21,

28. Like version 1.7.3, the software version in place at the time of the Complaint's filing, 1.6.0,

featured only one dUNL hosted by Ripple. Only well after the filing of the Complaint, in version

1.8.1, did the Ledger software begin to include another domain, hosted by the XRPL Foundation.

All prior versions of the XRP Ledger code, in place from its inception through the Complaint's

filing, either defaulted to a dUNL published by Ripple or specified validators controlled by Ripple.[11]

Defendants also argue that, because ▮▮▮ did not evaluate the code that permits "peer-to-

peer" sharing of trusted validator lists (*i.e.*, code that permits those operating a validator node on the

XRP Ledger to share a UNL with another XRP Ledger user), his opinion should be excluded. D.E.

at 13-14. Defendants again seek to substitute their lawyers' arguments for ▮▮▮ expertise.

▮▮▮ explained that peer-to-peer sharing was "not relevant" because even if the dUNL is

obtained from peers instead of Ripple's website, the need for consensus as to trusted validators

persists, and the source of dUNL, Ripple, "remains the same."[12] ▮▮▮ Tr. 162:24-164:22.

IV.   ▮▮▮ **Opinion Regarding Risks to the XRP Ledger If Ripple "Walked Away" Is Reliable and He Is Qualified to Offer It.**

Defendants assert that ▮▮▮ is unqualified to opine on the risks inherent in Ripple

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[11] Prior versions of XRP Ledger software are publicly available on Github.com. *See* Appx. A (citing relevant code lines in previous versions of the XRP Ledger software). The XRP Ledger software started defaulting to the dUNL published by Ripple in version 0.81.0 (released on January 4, 2018). Prior to that version, the XRP Ledger software specified specific validators, all controlled by Ripple. *See* Appx. A; ▮▮▮ Rep. at 26 & Figure 1.

[12] He also explained, beyond the portion of his testimony quoted by Defendants, D.E. 541 at 13, that if a corrupted default trusted validator list was published by Ripple, it was "probable" that the XRP Ledger would cease to function, though he would need more time to opine as to whether it was "100 percent [certain] that [the ledger] stops, or is just probable that it stops." ▮▮▮ Tr. 169:9-23.

"walking away" from the XRP Ledger and that his opinion is "wholly speculative." D.E. 541 at 14-

15. Yet expert testimony addressing hypothetical questions is admissible. *See McCormick v. Cleaver*

Brooks Co., 561 Fed. Appx. 121, 123 (2d Cir. 2014); *Salazar v. United States*, 2019 WL 948865, at *3

(S.D.N.Y. Feb. 11, 2019).

Furthermore, ███████ does not speculate about the future. His opinion is about risks that

"may" arise under certain hypothetical circumstances, grounded in the relevant facts and history,

including Ripple's historical and uninterrupted publication of a default list of trusted validators; its

control over, or funding of, 15 of 41 validators at the time of his Report; and the XRP Ledger's lack

of in-protocol incentives. ██████ Rep. at 26-28. Moreover, as a long-standing member of the

blockchain and academic communities, he is qualified to opine on the behavior of blockchain

participants in response to incentives, including academic institutions that often rely on funding for

projects. *See* █████ Tr. 354:3-356:10; *see also Alto v. Sun Pharm. Indus., Inc.*, 2021 WL 4803582, at *2

(S.D.N.Y. Oct. 13, 2021) (even where an expert "lacks formal training in a given area" he may still

be qualified to testify based on "'practical experience' or 'specialized knowledge'" (citation omitted));

In re Zyprexa Prod., 489 F. Supp. 2d 230, 282 (E.D.N.Y. 2007) (attacks on an expert's "educational or

other experiential background" go to weight, not admissibility (citation omitted)).

V.   ██████ Opinions Are Relevant and Should Not Be Excluded Under Rule 403.

███████ opinions are relevant to rebut Defendants' defenses. Defendants have made every

effort to advocate that the purported decentralization of the XRP Ledger means that XRP cannot be

a security, rendering ███████ testimony highly relevant. *E.g.*, D.E. 51 ¶ 13 (referencing the *Howey*

test, Ripple contending in its Answer that the purported decentralization of the XRP Ledger is part

of the "economic realities of XRP"). Defendants also put the "decentralization" concept, which

Director Hinman noted in his June 2018 speech, squarely at issue in their fair notice affirmative

defense. *See, e.g.*, D.E. 51 at 98; D.E. 257 at 3-4. ███████ proffered testimony rebuts these

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allegations by supplying evidence that the XRP Ledger does not satisfy the basic definition of

decentralization and is less decentralized than Bitcoin or Ethereum.

Defendants do not seriously dispute relevance, but instead argue that the jury will be

confused or Defendants will be prejudiced for a grab-bag of reasons, D.E. 541 at 15—none of

which has any merit, much less "substantially outweigh[s]" the relevance of ██████ opinions, as

required by Rule 403. Fed. R. Evid. 403. ██████ opinions should not be excluded because he

used the word "efforts," which Defendants contend is an "improperly loaded legal term."[13] D.E.

541 at 15. Any potential prejudice arising from ██████ use of a plain English word could be

eliminated with a curative instruction. Next, Defendants reargue that ██████ opinions concern a

version of XRP Ledger software "not in use during the period of the SEC's allegations," D.E. 541 at

15, failing to reveal that prior software versions in effect during the relevant period all shared the key

piece of code relevant to ██████ decentralization opinions. *See supra* at 12-13 & Appx. A. Finally,

Defendants argue, without any explanation as to what confusion or prejudice might ensue, that

██████ opinions invite the jury to "hypothesize a world in which Ripple no longer exists." D.E.

541 at 15. But Defendants have theorized about a hypothetical world in which Ripple ceases to exist

as part of their marketing and legal campaign around the XRP Ledger. *See supra* at 5. ██████

proffered testimony offers a different opinion about the risks that would inure to the XRP Ledger

(and therefore XRP) under these circumstances.

CONCLUSION

For the foregoing reasons, the Court should deny Defendants' motion to exclude ██████

testimony.

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[13] This is a meritless but brazen argument, given the litany of legal conclusions Defendants have proffered as purported expert testimony. *See* D.E. 536 at 17, 47, 53, 80. Defendants correctly observe that ██████ offers no legal opinions as to the import of any SEC official's speech or the proper application of the *Howey* test. D.E. 541 at 15.

Dated: New York, New York
        August 9, 2022

<div style="text-align: right;">

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Appendix A
XRP Ledger Software Versions

- 1.8.1, released November 24, 2021[1]
  - Lines 47-58[2] at https://github.com/XRPLF/rippled/blob/1.8.1/cfg/validators-example.txt
- 1.7.3, released August 11, 2021
  - Lines 46-56 at https://github.com/XRPLF/rippled/blob/1.7.3/cfg/validators-example.txt
- 1.7.2, released May 19, 2021
  - Lines 46-56 at https://github.com/XRPLF/rippled/blob/1.7.2/cfg/validators-example.txt
- 1.7.0, released February 23, 2021
  - Lines 46-56 at https://github.com/XRPLF/rippled/blob/1.7.0/cfg/validators-example.txt
- 1.6.0, released August 18, 2020
  - Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.6.0/cfg/validators-example.txt
- 1.5.0, released March 30, 2020
  - Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.5.0/cfg/validators-example.txt
- 1.4.0, released November 26, 2019
  - Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.4.0/cfg/validators-example.txt
- 1.3.1, released July 24, 2019
  - Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.3.1/cfg/validators-example.txt
- 1.3.0, released July 9, 2019
  - Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.3.0/cfg/validators-example.txt
- 1.2.4, released April 15, 2019
  - Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.2.4/cfg/validators-example.txt
- 1.2.3, released March 28, 2019
  - Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.2.3/cfg/validators-example.txt
- 1.2.2, released March 5, 2019
  - Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.2.2/cfg/validators-example.txt
- 1.2.1, released February 25, 2019

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[1] Release dates reflect the final update listed on GitHub, https://github.com/XRPLF/rippled/tags.
[2] Line cites are to the code specifying: (i) two dUNLs, one published by Ripple (version 1.8.1); (ii) a single dUNL, published by Ripple (versions 0.81.0 through 1.7.3); or (iii) specific validators controlled by Ripple (versions 0.12.0 through 0.80.2).

- o   Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.2.1/cfg/validators-example.txt
- 1.2.0, released February 12, 2019
  - o   Lines 53-63 at https://github.com/XRPLF/rippled/blob/1.2.0/cfg/validators-example.txt
- 1.1.2, released November 29, 2018
  - o   Lines 48-58 at https://github.com/XRPLF/rippled/blob/1.1.2/cfg/validators-example.txt
- 1.1.1, released October 19, 2018
  - o   Lines 48-58 at https://github.com/XRPLF/rippled/blob/1.1.1/cfg/validators-example.txt
- 1.1.0, released September 14, 2018
  - o   Lines 48-58 at https://github.com/XRPLF/rippled/blob/1.1.0/cfg/validators-example.txt
- 1.0.1, released June 4, 2018
  - o   Lines 48-52 at https://github.com/XRPLF/rippled/blob/1.0.1/cfg/validators-example.txt
- 1.0.0, released May 11, 2018
  - o   Lines 48-52 at https://github.com/XRPLF/rippled/blob/1.0.0/cfg/validators-example.txt
- 0.90.1, released March 21, 2018
  - o   Lines 48-52 at https://github.com/XRPLF/rippled/blob/0.90.1/doc/validators-example.txt
- 0.90.0, released February 20, 2018
  - o   Lines 48-52 at https://github.com/XRPLF/rippled/blob/0.90.0/doc/validators-example.txt
- 0.81.0, released January 4, 2018
  - o   Lines 48-52 at https://github.com/XRPLF/rippled/blob/0.81.0/doc/validators-example.txt
- 0.80.2, released December 15, 2017
  - o   Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.80.2/doc/validators-example.txt
- 0.80.1, released November 29, 2017
  - o   Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.80.1/doc/validators-example.txt
- 0.80.0, released October 23, 2017
  - o   Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.80.0/doc/validators-example.txt
- 0.70.2, released September 21, 2017
  - o   Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.70.2/doc/validators-example.txt
- 0.70.1, released July 10, 2017
  - o   Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.70.1/doc/validators-example.txt
- 0.70.0, released June 15, 2017

- o Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.70.0/doc/validators-example.txt
- 0.60.3, released May 11, 2017
  - o Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.60.3/doc/validators-example.txt
- 0.60.2, released March 30, 2017
  - o Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.60.2/doc/validators-example.txt
- 0.60.1, released March 29, 2017
  - o Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.60.1/doc/validators-example.txt
- 0.60.0, released March 17, 2017
  - o Lines 48-54 at https://github.com/XRPLF/rippled/blob/0.60.0/doc/validators-example.txt
- 0.50.3, released March 14, 2017
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.50.3/doc/validators-example.txt
- 0.50.2, released January 30, 2017
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.50.2/doc/validators-example.txt
- 0.50.0, released January 27, 2017
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.50.0/doc/validators-example.txt
- 0.40.1, released January 11, 2017
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.40.1/doc/validators-example.txt
- 0.40.0, released December 20, 2016
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.40.0/doc/validators-example.txt
- 0.33.0-hf1, released October 1, 2016
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.33.0-hf1/doc/validators-example.txt
- 0.33.0, released September 29, 2016
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.33.0/doc/validators-example.txt
- 0.32.1, released July 29, 2016
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.32.1/doc/validators-example.txt
- 0.32.0, released June 27, 2016
  - o Lines 37-43 at https://github.com/XRPLF/rippled/blob/0.32.0/doc/validators-example.txt
- 0.31.2, released June 10, 2016
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.31.2/doc/validators-example.txt
- 0.31.0, released April 18, 2016

- o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.31.0/doc/validators-example.txt
- 0.30.1, released February 10, 2016
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.30.1/doc/validators-example.txt
- 0.30.0, released October 21, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.30.0/doc/validators-example.txt
- 0.29.0, released August 4, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.29.0/doc/validators-example.txt
- 0.28.2, released July 7, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.28.2/doc/validators-example.txt
- 0.28.1, released May 20, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.28.1/doc/validators-example.txt
- 0.28.0, released April 24, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.28.0/doc/validators-example.txt
- 0.27.4, released March 18, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.27.4/doc/validators-example.txt
- 0.27.3-sp1, released March 11, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.27.3-sp1/doc/validators-example.txt
- 0.27.3, released March 10, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.27.3/doc/validators-example.txt
- 0.27.2, released March 1, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.27.2/doc/validators-example.txt
- 0.27.1, released February 24, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.27.1/doc/validators-example.txt
- 0.27.0, released January 26, 2015
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.27.0/doc/validators-example.txt
- 0.26.4-sp1, released November 10, 2014
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.26.4-sp1/doc/validators-example.txt
- 0.26.4, released November 19, 2014
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.26.4/doc/validators-example.txt
- 0.26.2, released August 14, 2014

- o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.26.2/doc/validators-example.txt
- 0.26.1, released July 31, 2014
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.26.1/doc/validators-example.txt
- 0.26.0, released July 22, 2014
  - o Lines 22-27 at https://github.com/XRPLF/rippled/blob/0.26.0/doc/validators-example.txt
- 0.25.2, released July 7, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.25.2/doc/validators-example.txt
- 0.25.1, released May 15, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.25.1/doc/validators-example.txt
- 0.25.0, released May 14, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.25.0/doc/validators-example.txt
- 0.24.0, released May 5, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.24.0/doc/validators-example.txt
- 0.23.0, released March 14, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.23.0/doc/validators-example.txt
- 0.22.0, released March 4, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.22.0/doc/validators-example.txt
- 0.21.0, released January 23, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.21.0/doc/validators-example.txt
- 0.20.1, released January 8, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.20.1/doc/validators-example.txt
- 0.20.0, released January 8, 2014
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.20.0/doc/validators-example.txt
- 0.19.2, released November 27, 2013
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.19.2/doc/validators-example.txt
- 0.19.1, released November 27, 2013
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.19.1/doc/validators-example.txt
- 0.19.0, released November 23, 2013
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.19.0/doc/validators-example.txt
- 0.18.0, released November 22, 2013

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- o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.18.0/doc/validators-example.txt
- 0.17.0, released November 7, 2013
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.17.0/doc/validators-example.txt
- 0.16.0, released October 2, 2013
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.16.0/doc/validators-example.txt
- 0.15.0, released October 2, 2013
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.15.0/doc/validators-example.txt
- 0.14.0, released October 2, 2013
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.14.0/doc/validators-example.txt
- 0.12.0, released August 26, 2013
  - o Lines 22-25 at https://github.com/XRPLF/rippled/blob/0.12.0/validators-example.txt