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S.C. SUPREME COURT

ATTACHMENTS

RETURN TO OBJECTION TO CERTIFICATION

1. Declaration of Joseph F. Antognini, M.D., M.B.A., submitted in Federal District Court, District of South Carolina, *Bowman v. Stirling,* C/A 3:25-cv- 00199-JDA, ECF No. 18-1;

2. Opinion and Order, construing motion for a preliminary injunction as a motion for a temporary restraining order, and denying motion, Federal District Court, District of South Carolina, *Bowman v. Stirling*, C/A 3:25-cv- 00199-JDA, ECF No. 21.

ATTACHMENT 1

IN THE DISTRICT COURT OF THE UNITED STATES
FOR THE DISTRICT OF SOUTH CAROLINA
COLUMBIA DIVISION

Marion Bowman, Jr., Plaintiff, v. Bryan P. Stirling, *in his official capacity as the Director of the South Carolina Department of Corrections*; Henry Dargan McMaster, *in his official Capacity as Governor of the State of South Carolina*, Defendants,	Case No. 3:25-cv-00199-JDA **OPINION AND ORDER**

This matter is before the Court on Plaintiff's motion for preliminary injunction and request for expedited consideration ("Plaintiff's Motion"). [Doc. 6.] Plaintiff is a prisoner under the control and supervision of South Carolina Department of Corrections ("SCDC"), having been convicted and sentenced to death for murder. *See Bowman v. Stirling*, 45 F.4th 740, 743 (4th Cir. 2022). In this action, Plaintiff alleges his constitutional rights to procedural due process have been violated by Defendants' refusal to provide him with particular information about the drugs SCDC has obtained for purposes of carrying out his death by lethal injection. [Doc. 1.] Pursuant to Rule 65 of the Federal Rules of Civil Procedure, Plaintiff asks the Court to preliminarily enjoin his execution so he is not put to death before the constitutional claim detailed in his Complaint can be adjudicated. [Doc. 6 at 1.] The Court construes this motion for preliminary injunction as one for a temporary restraining order. *See Hoechst Diafoil Co. v. Nan Ya Plastics Corp.*, 174 F.3d 411, 422 (4th Cir. 1999) (explaining that "a preliminary injunction preserves the status quo pending a final trial on the merits, [while] a temporary restraining order is intended to preserve the

status quo only until a preliminary injunction hearing can be held"); *see also Bothwell v. ExpressJet Airlines, LLC*, No. 1:20-cv-02079-WMR, 2020 WL 6931059, at *1 (N.D. Ga. Oct. 6, 2020) ("Although Plaintiff titles its Motion as a request for a Preliminary Injunction, the Court treats it as a Motion for a Temporary Restraining Order because of the emergency nature of the claim.").

BACKGROUND

Historical Events and State-Court Litigation Regarding South Carolina's Death Penalty Statute

In 2021, the South Carolina Legislature (the "Legislature") amended South Carolina's death penalty statute (the "Death Penalty Statute" or the "Statute") to make electrocution the default method of execution but to permit the person sentenced to death to also choose "firing squad or lethal injection, if it is available at the time of election." S.C. Code Ann. § 24-3-530(A). South Carolina law further provides that, upon receiving a notice of execution, SCDC's director (the "Director") must "determine and certify by affidavit under penalty of perjury to the Supreme Court whether the methods [of execution] provided" by the Death Penalty Statute—electrocution, firing squad, and lethal injection—"are available." *Id.* § 24-3-530(B).

Plaintiff alleges that from 1995 until 2021, lethal injection had been the default means of execution in South Carolina but that South Carolina did not carry out executions between May 6, 2011, and September 20, 2024, due in part to the reluctance of drug manufacturers and suppliers to provide drugs for executions in a manner that might publicly reveal their identities. [Doc. 1 ¶¶ 7–8.] In 2023, the Legislature enacted legislation amending an existing statute to provide protection from disclosure to drug suppliers and all other persons or entities associated with the "planning or administration"

of an execution. [*Id.* ¶ 13]; 2023 S.C. Laws Act 16. As amended, the statute (the "Shield Statute") exempts the purchase of lethal injection drugs from South Carolina's procurement rules, Department of Health and Environmental Control regulations, and pharmacy guidelines. [Doc. 1 ¶ 13]; S.C. Code Ann. § 24-3-580(D)–(F). With the Shield Statute in place, Defendant Director Bryan P. Stirling ("Stirling") was able to acquire—from an unidentified source—the drugs needed to carry out lethal injection executions, and he so informed the state supreme court in September 2023. [Doc. 1 ¶ 15.]

Four other death-sentenced prisoners recently litigated a lawsuit in South Carolina state court alleging that the Death Penalty Statute violates the state constitution in several respects. *See Owens v. Stirling*, 904 S.E.2d 580 (S.C. 2024) ("*Owens*"). On July 31, 2024, the state supreme court issued a decision in that case holding that the Statute is not impermissibly retroactive; that neither death by electrocution, death by firing squad, nor the provision allowing the condemned to choose his execution method violates the South Carolina constitutional mandate "nor shall cruel, nor corporal, nor unusual punishment be inflicted"; that the term "available" in the Statute allowing inmates to elect either firing squad or lethal injection as an alternative to electrocution "if available," is not unconstitutionally vague; and that the provision requiring the Director to determine the drug protocol to use to carry out the death sentence by lethal injection does not violate separation of powers. *Id.* Regarding the constitutionality of the provision allowing condemned inmates to choose among the different execution methods, the court emphasized that the provision represented "the General Assembly's sincere effort to make the death penalty less inhumane while enabling the State to carry out its laws." *Id.* at 608. The court also held that the provision requiring the Director to "determine and

certify by affidavit . . . whether the methods . . . are available" mandates that if the Director is able to obtain the necessary drugs, he "must explain to those legally entitled to the explanation the basis of his determination that the drugs are of sufficient potency, purity, and stability to carry out their intended purpose," which "requires nothing more than that the Director set forth that process in sufficient detail that a condemned inmate and his attorneys may understand whether there is a basis for challenging the constitutionality of the impending execution." *Id.* at 604–05 (internal quotation marks omitted).

After issuing *Owens*, on August 23, 2024, the state supreme court issued an execution notice directing SCDC to set the execution of Freddie Owens for September 20, 2024.[1] [Doc. 1 ¶ 18]; *see Bixby v. Stirling*, No. 3:24-cv-05072-JDA, 2024 WL 4224081, at *2 (D.S.C. Sept. 18, 2024) (*"Bixby I"*).[2] Five days later, Stirling submitted a certification to that court, pursuant to S.C. Code Ann. § 24-3-530(B), stating, among other things, that SCDC had obtained pentobarbital for use in a lethal injection; that the pentobarbital is of sufficient potency, purity, and stability to carry out an execution successfully; and that the forensic laboratory of the South Carolina Law Enforcement Division ("SLED") had tested and approved the pentobarbital. [Docs. 1 ¶¶ 19–20; 1-4.]

[1] On August 30, 2024, the state supreme court issued an order establishing a regular interval of at least 35 days between the issuance of death notices and determined that after the issuance of Owens's death notice, the court would issue notices for inmates with exhausted appeals in the following order: (1) Richard Moore, (2) Plaintiff, (3) Brad Sigmon, (4) Mikal Mahdi, (5) Steven Bixby (collectively, the "Condemned Prisoners"). [Docs. 1 ¶ 21; 1-5.]

[2] In 2015, Owens's legal name was changed to Khalil Divine Black Sun Allah. However, because all of Owens's prior proceedings before the South Carolina state and federal courts were filed under the name Freddie Owens, the Court uses the name Owens for clarity. *See Bixby I*, 2024 WL 4224081, at *2 n.1.

Owens subsequently filed an objection in the state supreme court to Stirling's certification, asserting that his affidavit was insufficient and requesting additional information about the testing and properties of the execution drugs SCDC had obtained (the "Additional Information").[3] [Doc. 1-6.] To his objection, Owens attached an affidavit from Dr. Michaela Almgren, Pharm.D. M.S., explaining why Owens needed the Additional Information to make an informed decision as to which execution method would pose the least risk of harm (the "Almgren Affidavit"). [Docs. 1-6; 1-7.] On September 5, 2024, the state supreme court overruled Owens's objection and denied his request, ruling that Stirling had provided all the information that the Death Penalty Statute required. [Docs. 1 ¶ 22; 1-8.] The next day, 14 days before his execution date, Owens made his election regarding the method of execution, choosing death by lethal injection. *See Bixby I*, 2024 WL 4224081, at *2; S.C. Code Ann. § 24-3-530(A) (providing that the election "must be made in writing fourteen days before each execution date or it is waived").

The Prior § 1983 Action

On September 13, 2024, the Condemned Prisoners brought an action in this Court under 42 U.S.C. § 1983, and Owens requested that the Court preliminarily enjoin his execution scheduled for September 20, 2024. [Doc. 1 ¶ 23]; *Bixby I*, 2024 WL 4224081,

[3] Specifically, Owens argued that the affidavit did not provide information about the date the drugs were tested; their Beyond Use Date or expiration date; the methods and procedures used to test the drugs, including documentation of test method validation and details of quality control procedures and methodology; the actual results of the testing; and where the drugs were to be stored prior to their use and how the storage considerations would be monitored, including temperature and humidity controls. [Docs. 1-6; 1-7.] Accordingly, Owens requested "the actual report and results from the testing of the lethal injection drugs intended for use in [Owens's] execution (with the identity of the analyst redacted) and documentation of the drugs' beyond use date and storage conditions." [Doc. 1-6 at 5.]

at *2–3. The Condemned Prisoners' complaint included four claims. It first alleged that South Carolina's death penalty laws, as applied to them, deprived them of their rights to due process under the Fourteenth Amendment to the United States Constitution and Article I, Section 3 of the South Carolina Constitution. *Bixby I*, 2024 WL 4224081, at *3. In that claim, they alleged "that South Carolina's refusal to provide them with the Additional Information deprive[d] them, without due process, of their 'state-created rights to information and to choose their method of execution.'" [*Id.*] They also alleged they had a constitutional liberty interest in being free from cruel and unusual punishment that causes needless suffering, and they claimed that without the Additional Information, they could not determine whether they had a basis to challenge the constitutionality of the lethal injection option, nor could they meaningfully litigate any such claim. [*Id.*]

The Condemned Prisoners' second claim was a facial procedural due process claim, which they asserted under both the federal and state Constitutions regarding the Shield Statute. [*Id.*] They alleged that the Shield Statute deprives death-sentenced prisoners of their state-created right to certain information concerning execution drugs and to choose an execution method that is less inhumane than other options. [*Id.*] Their third and fourth claims alleged that denying them the Additional Information infringed their right to access the courts by depriving them of information they needed to litigate an Eighth Amendment claim and violated their right to assistance of counsel as well. [*Id.*]

On September 18, 2024, this Court issued an Order denying Owens's request to preliminarily enjoin his execution. [Doc. 1 ¶ 24]; *Bixby* I, 2024 WL 4224081. The Fourth Circuit also denied Owens's request for an injunction, *see Owens v. Stirling*, No. 24-3, 2024 WL 4249852 (4th Cir. Sept. 20, 2024), and the United States Supreme Court denied

an application for stay of execution, *see Owens v. Stirling*, No. 24-5603, 2024 WL 4249018 (U.S. Sept. 20, 2024). Accordingly, Owens was executed on September 20, 2024. [Doc. 1 ¶ 24.]

On October 4, 2024, the state supreme court issued a notice of execution for Moore, setting an execution date of November 1, 2024. [*Id.* ¶ 25.] Four days later, Stirling filed a certification in the state supreme court describing the availability and testing of pentobarbital for Moore's execution. [*Id.*; Doc. 1-9.] The information he provided was essentially identical to that which he had provided regarding the availability and testing of pentobarbital for Owens's execution. [Doc. 1 ¶ 25; *compare* Doc. 1-4 *with* Doc. 1-9.]

On October 30, 2024, this Court, in ruling on a motion to dismiss in the Condemned Prisoner's case, dismissed all claims brought by Owens without prejudice for mootness because he had already been executed; granted the motion to dismiss without prejudice as to claims against SCDC based on Eleventh Amendment immunity; granted the motion to dismiss with prejudice as to the remaining Condemned Prisoners' claims challenging the Shield Statute; and dismissed without prejudice, for lack of standing and ripeness, all claims brought by the Condemned Prisoners challenging the defendants' refusal to provide information about Owens's execution that the Shield Statute did not protect.[4] *Bixby v. Stirling*, No. 3:24-cv-05072-JDA, 2024 WL 4627451 (D.S.C. Oct. 30, 2024) ("*Bixby II*"). The Condemned Prisoners did not appeal, and on November 1, 2024, the State of South Carolina executed Moore by lethal injection. [Doc. 1 ¶¶ 26, 28.]

[4] The Court concluded that the remaining Condemned Prisoners lacked standing concerning those claims because the Director would be required to issue a new certification for each execution and many changes could occur from one certification to the next. *Bixby I*, 2024 WL 4627451, at *9. The Court concluded, for similar reasons, that these claims of the remaining Condemned Prisoners were not yet ripe. *Id.* at *9 n.10.

Preparations for Plaintiff's Execution and the Present Action

On January 3, 2025, the state supreme court issued a notice of execution for Plaintiff, scheduling his execution for January 31, 2024. [Docs. 1 ¶ 31; 1-14.] Five days later, Stirling submitted a certification to that court, pursuant to S.C. Code Ann. § 24-3-530(B), providing information about the pentobarbital that was essentially identical to those he had provided for Owens's and Moore's executions.[5] [Doc. 1-15.] Plaintiff filed the present action on January 10, 2025. [Doc. 1.]

As directed by S.C. Code Ann. § 24-3-530(A) and (C), Plaintiff was required to choose his method of execution by January 17, 2024, and Plaintiff selected lethal injection. [Doc. 1 ¶ 33]; *see State v. Bowman*, No. 2025-000013, available at the South Carolina Appellate Case Management System, https://ctrack.sccourts.org/public/caseSearch.do (search by case number) (last visited Jan. 27, 2025). Plaintiff alleges that the Almgren Affidavit explains why Stirling's certification, without the Additional Information, leaves Plaintiff "unable to make an informed choice about which method of execution poses the least risk of harm." [Doc. 1 ¶ 34–35; *see* Doc. 1-7.] Plaintiff alleges that the Shield Statute, on its face, does not restrict access to the Additional Information. [Doc. 1 ¶ 36.] He further alleges that his need for sufficient information about the integrity of the lethal injection drugs is heightened because of the circumstances under which the drugs were obtained, namely, that Stirling admitted to making over 1,300 contacts before he was successful in obtaining pentobarbital. [*Id.* ¶ 38.] Plaintiff contends that the

[5] The paragraphs in the three certifications relating to the lethal injection drugs contain minor differences, but none are relevant to the issues before the Court. [*Compare* Doc. 1-4 ¶ 10 *with* Doc. 1-9 ¶ 10 *and* Doc. 1-15 ¶ 10.]

difficulty Defendants faced in acquiring the drugs from standard sources raises legitimate questions about the quality of the materials they eventually obtained. [*Id.*] Additionally, Plaintiff maintains that the need for information concerning the drugs is greater due to the absolute restrictions the Shield Statute places on disclosure of information relating to the source of the drugs and the circumstances surrounding their creation, and due to the exemptions from licensing and regulatory requirements that the Shield Statute grants to those involved in manufacturing and procuring the drugs. [*Id.* ¶ 39.] Plaintiff complains that he is unable to obtain information regarding the "professional qualifications" of the people who would be setting up, preparing, and administering the lethal injection process. [*Id.* (internal quotation marks omitted).] Plaintiff also alleges that "troubling circumstances" concerning Moore's execution and possible complications from Plaintiff's unusually large body size increase the danger of "a potentially torturous execution process." [*Id.* ¶¶ 41–43.]

In his Complaint, Plaintiff alleges that South Carolina's death penalty laws, as applied to him, have deprived him of his rights to procedural due process under the Fourteenth Amendment to the United States Constitution and Article I, Section 3 of the South Carolina Constitution. [Doc. 1 ¶¶ 44–54.] Plaintiff alleges that he has a "state-created right to information about the methods of execution" based on the *Owens* Court's holding that S.C. Code Ann. § 24-3-530(B) "'requires . . . that the Director set forth [the process he used in determining that lethal injection was an available method of execution] in sufficient detail that a condemned inmate and his attorneys may understand whether there is a basis for challenging the constitutionality of the impending execution,' and [the court's statement that] '[t]here is a Due Process Clause component to [this] analysis.'"

[*Id.* ¶ 48 (some alterations in original) (quoting *Owens*, 904 S.E.2d at 605).] He also alleges he has "a statutory right to choose among the available methods of execution." [*Id.*] He alleges that "Stirling's refusal to provide the [Additional Information] implicates [Plaintiff's] state-created right to information and to choose his method of execution." [*Id.* ¶ 49.] He alleges that "[b]ecause a state-created liberty interest is at stake, [he] is entitled to procedural due process protections" and that Stirling's refusal to provide the Additional Information constitutes a denial of his due process rights. [*Id.* ¶¶ 49–52.] To the extent that Defendants maintain that the Shield Statute requires that they refuse to provide the Additional Information, Plaintiff alleges that Defendants' interpretation of that statute also violates Plaintiff's rights to procedural due process. [*Id.* ¶ 54.]

As relief, Plaintiff requests a preliminary and permanent injunction prohibiting Defendants from carrying out his execution without providing him the Additional Information with sufficient notice at least 23 days ahead of his execution. [*Id.* ¶ 55.] Alternatively, he requests an injunction allowing him to conduct independent testing on the drugs to be used in his execution and to have full access to the test results as well as information concerning the drugs' storage conditions. [*Id.*] He also seeks declaratory relief and any other relief that Court deems just and proper. [*Id.*]

Plaintiff's Motion

As stated, pursuant to Rule 65 of the Federal Rules of Civil Procedure, Plaintiff asks the Court to preliminarily enjoin his execution so that he is not executed before his case can be adjudicated. [Doc. 6 at 1.] He contends that he "has a state-conferred right to choose the least inhumane method of execution available" and to have the Director "provide 'sufficient detail' about the execution drugs such 'that a condemned inmate and

his attorneys may understand whether there is a basis for challenging the constitutionality of the impending execution.'" [*Id.* at 6–8 (quoting *Owens*, 904 S.E.2d at 605).] Plaintiff maintains that Defendants' refusal to provide the Additional information undermines his ability to make an informed choice about his method of execution. [*Id.* at 8–12.] He also asserts that providing him the Additional Information would not significantly impair any state interest. [*Id.* at 12–16.] Accordingly, Plaintiff maintains that he has demonstrated a strong likelihood of success on his claim that Defendants have violated his procedural due process rights. [*Id.* at 16.] He also argues that he will suffer irreparable harm without a preliminary injunction, that the threatened injury to him outweighs any minimal harm injunctive relief might cause Defendants, and that an injunction is in the public interest. [*Id.* at 16–20.]

Plaintiff contends that, at a minimum, the Court should temporarily stay his execution, scheduled for January 31, 2025, to permit full briefing and consideration of Plaintiff's Motion. [*Id.* at 20.] He also argues that following briefing and any argument or hearing that the Court requires, the Court should enter a preliminary injunction staying his execution until this suit has been fully adjudicated. [*Id.*] And, Plaintiff asks the Court to establish expedited briefing and hearing schedules to address the matters raised in this motion and in the Complaint.[6] [*Id.*]

[6] On January 22 and 27, 2025, Defendants filed a memorandum opposing Plaintiff's motion and Plaintiff filed a reply. [Docs. 18; 20.] The Court has considered the arguments outlined in those filings.

APPLICABLE LAW

Section 1983

Section 42 U.S.C. § 1983 provides a private cause of action for constitutional violations by persons acting under color of state law. Section 1983 "'is not itself a source of substantive rights,' but merely provides 'a method for vindicating federal rights elsewhere conferred.'" *Albright v. Oliver*, 510 U.S. 266, 271 (1994) (quoting *Baker v. McCollan*, 443 U.S. 137, 144 n.3 (1979)). Accordingly, a civil action under § 1983 allows "a party who has been deprived of a federal right under the color of state law to seek relief." *City of Monterey v. Del Monte Dunes at Monterey, Ltd.*, 526 U.S. 687, 707 (1999). The Supreme Court has held that prisoners can bring method-of-execution claims under § 1983. *See Nance v. Ward*, 597 U.S. 159, 168–75 (2022).

Injunctive Relief

"[A] stay of execution is an equitable remedy. It is not available as a matter of right, and equity must be sensitive to the State's strong interest in enforcing its criminal judgments without undue interference from the federal courts." *Hill v. McDonough*, 547 U.S. 573, 584 (2006). "[I]nmates seeking time to challenge the manner in which the State plans to execute them must satisfy all of the requirements for a stay, including a showing of a significant possibility of success on the merits." *Id.* "It is not enough merely to file [a § 1983 action]." *Johnson v. Lombardi*, 809 F.3d 388, 390 (8th Cir. 2015); *see Hill*, 547 U.S. at 583–84.

"The substantive standard for granting either a temporary restraining order or a preliminary injunction is the same." *Collins v. Durant*, No. 2:23-05273-RMG, 2024 WL 4143347, at *1 (D.S.C. Sept. 11, 2024) (internal quotation marks omitted). The current

standard for granting preliminary injunctive relief is set forth in *Winter v. Natural Resources Defense Council, Inc.*, 555 U.S. 7 (2008). Under *Winter*, to obtain a preliminary injunction, the moving party must demonstrate "that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in his favor, and that an injunction is in the public interest." 555 U.S. at 20; *see also League of Women Voters of N.C. v. North Carolina*, 769 F.3d 224, 236 (4th Cir. 2014). The party seeking a preliminary injunction bears the burden of establishing each of the four requirements. *The Real Truth About Obama, Inc. v. FEC*, 575 F.3d 342, 346 (4th Cir. 2009), *vacated on other grounds*, 559 U.S. 1089 (2010), *reinstated in relevant part*, 607 F.3d 355 (4th Cir. 2010) (per curiam).

DISCUSSION

Governing Law and Plaintiff's Argument

In Plaintiff's Motion, Plaintiff argues that he is likely to succeed on his claim alleging that Defendants have violated his due process rights by refusing to provide him with the Additional Information.[7] [Doc. 6 at 6–16.] The Court disagrees.[8]

[7] As noted, Plaintiff also argues that he will suffer irreparable harm without a preliminary injunction, that the threatened injury to him outweighs any minimal harm injunctive relief might cause Defendants, and that an injunction is in the public interest. [Doc. 6 at 16–20.] Because the Court concludes that Plaintiff has shown no likelihood of success on the merits, the Court does not address the other *Winter* requirements.

[8] The Court notes that Plaintiff's claim is not mooted by the fact that he has already elected the method by which he will be executed. Plaintiff was required by the Statute to make his election by January 17, 2025—14 days prior to the date set for his execution. *See* S.C. Code Ann. § 24-3-530(A), (C). Were he successful in obtaining the requested injunctive relief, he would become entitled to receive the Additional Information and use it to make a different election. [Docs. 1 ¶ 55; 6 at 20]; *see* S.C. Code Ann. § 24-3-530(A) (providing that "[i]f the convicted person receives a stay of execution . . ., then the election expires and must be renewed in writing fourteen days before a new execution date").

Under the Due Process Clause of the Fourteenth Amendment, a state may not "deprive any person of life, liberty, or property, without due process of law." U.S. Const. amend. XIV. "To state a procedural due process violation [under the Fourteenth Amendment], a plaintiff must (1) identify a protected liberty or property interest and (2) demonstrate deprivation of that interest without due process of law." *Prieto v. Clarke*, 780 F.3d 245, 248 (4th Cir. 2015). "A liberty interest may arise from the Constitution itself, by reason of guarantees implicit in the word 'liberty,' or it may arise from an expectation or interest created by state laws or policies." *Wilkinson v. Austin*, 545 U.S. 209, 221 (2005) (internal citation omitted).

In Plaintiff's Motion, Plaintiff does not argue that he is likely to succeed in proving that any liberty interest in having the Additional Information arises from the Constitution itself or by reason of guarantees implicit in the word "liberty."[9] Rather, he argues that the

[9] Although Plaintiff does not argue in his motion that the Constitution itself provides him a right to receive the Additional Information that is independent of any liberty interest that South Carolina has created, the Court nonetheless notes that "the United States Court of Appeals for the Fourth Circuit has never decided whether a death row inmate has a right to discover information pertaining to his execution, but every other circuit to address a prisoner's procedural due process challenge to a secrecy statute has squarely rejected it." *Bixby I*, 2024 WL 4224081, at *5 n.8 (cleaned up). Specifically, the Eleventh Circuit has held that a prisoner has no procedural due process right "to know where, how, and by whom the lethal injection drugs will be manufactured, as well as the qualifications of the person or persons who will manufacture the drugs, and who will place the catheters." *Jones v. Comm'r, Ga. Dep't of Corr.*, 811 F.3d 1288, 1292–93 (11th Cir. 2016) (internal quotation marks omitted). The Fifth, Sixth, and Eighth Circuits have reached similar conclusions. *See Phillips v. DeWine*, 841 F.3d 405, 420 (6th Cir. 2016) ("Plaintiffs argue that HB 663 prevents them from bringing an effective challenge to Ohio's execution procedures. Specifically, they maintain that HB 663 denies [them] an opportunity to discovery and litigate non-frivolous claims. But no constitutional right exists to discover grievances or to litigate effectively once in court." (alteration in original) (internal quotation marks omitted)); *Zink v. Lombardi*, 783 F.3d 1089, 1109 (8th Cir. 2015) (en banc) (concluding that the Constitution does not require detailed disclosure about a state's execution protocol and that a "prisoner's assertion of necessity—that [the State] must disclose its protocol so he can challenge its conformity with the Eighth Amendment—

Death Penalty Statute and the state supreme court's interpretation of it create the relevant liberty interest, first, by requiring the Director to share certain information regarding drugs that have been obtained for use in the lethal injection process and, second, by allowing condemned inmates to elect a method of execution. [Doc. 6 at 6–8.]

To establish the existence of a state-created liberty interest, a prison inmate must first show that a state statute, regulation, or policy "creates an objective expectation in the liberty interest in such a way that an inmate could reasonably expect to enforce it against prison officials." *Desper v. Clarke*, 1 F.4th 236, 247 (4th Cir. 2021) (cleaned up). For a state regulation to create such a liberty interest, it must "contain explicitly mandatory language, *i.e.*, specific directives to the decisionmaker that if the regulation['s] substantive predicates are present, a particular outcome must follow." *Kentucky Dep't of Corr. v. Thompson*, 490 U.S. 454, 463 (1989) (internal quotation marks omitted); *see also Henderson v. City of Roanoke*, No. 20-2386, 2022 WL 704351, at *3 (4th Cir. Mar. 9, 2022) (per curiam) ("The use of explicitly mandatory language, in connection with the establishment of specified substantive predicates to limit discretion, forces a conclusion that the State has created a liberty interest." (cleaned up)). In other words, a state creates a liberty interest when it places "substantive limitations on official discretion," *Olim v. Wakinekona*, 461 U.S. 238, 249 (1983), "by establishing 'substantive predicates' to govern official decision making and, further, by mandating the outcome to be reached upon a finding that the relevant criteria have been met," *Thompson*, 490 U.S. at 462

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does not substitute for the identification of a cognizable liberty interest" (internal quotation marks omitted) (citations omitted)); *Trottie v. Livingston*, 766 F.3d 450, 452 (5th Cir. 2014) ("A due process right to disclosure requires an inmate to show a cognizable liberty interest in obtaining information about execution protocols . . . . However, we have held that an uncertainty as to the method of execution is not a cognizable liberty interest.").

(internal citation omitted); *see also Smith v. Ashcroft*, 295 F.3d 425, 429 (4th Cir. 2002) ("In order for a statute to create a vested liberty or property interest giving rise to procedural due process protection, it must confer more than a mere expectation . . . of a benefit. There must be *entitlement* to the benefit as directed by statute, and the statute must act to limit meaningfully the discretion of the decision-makers." (internal quotation marks and citation omitted)). And "[f]ederal courts look to decisions of the highest state court to determine whether there is a state-created liberty interest." *Feusi v. Centurion of Idaho, LLC*, No. 1:24-cv-00172-DCN, 2024 WL 2319790, at *7 (D. Idaho May 21, 2024); *see Gurley v. Rhoden*, 421 U.S. 200, 208 (1975) ("[A] State's highest court is the final judicial arbiter of the meaning of state statutes."); *Winters v. New York*, 333 U.S. 507, 514 (1948) (explaining that the state court's "construction fixes the meaning of the statute," putting the "words in the statute as definitively as if it had been so amended by the legislature"); *see also Griffin v. Wisconsin*, 483 U.S. 868, 875 (1987) ("Whether or not [a federal court] would choose to interpret a similarly worded federal [provision] in that fashion, [the federal court is] bound by the state court's interpretation, which is relevant to [the federal court's] constitutional analysis only insofar as it fixes the meaning of the [statute.]").

Here, the Court concludes that Plaintiff has not identified any state-created liberty interest that he was deprived of.

Plaintiff's Interest in Receiving the Additional Information in the Director's Certification

The Court begins with Plaintiff's claim that he was deprived of a state-created interest in the Director providing him the Additional Information as part of his certification that lethal injection is available as an execution method. Subsection (B) of the Statute

provides, "Upon receipt of the notice of execution, the [Director] shall determine and certify by affidavit under penalty of perjury to the Supreme Court whether the [three execution methods] are available." S.C. Code Ann. § 24-3-530(B). As the *Owens* court explained, the Statute creates two related duties on the part of the Director as it pertains to the method of lethal injection: "First, he must use reasonably diligent and thorough efforts to obtain the drugs necessary to carry out an execution. Second, he must explain to the condemned inmate and other parties legally entitled to the explanation the results of his efforts." *Owens*, 904 S.E.2d at 604.

The first duty (the "Determination Duty") requires the Director "to make a bona fide effort to give each inmate who is scheduled to die a choice between all three methods, including lethal injection." *Id.* (internal quotation marks omitted). That duty necessarily requires the Director to go "through a process that he decides is appropriate *for satisfying himself* that the drugs are capable of carrying out the death sentence according to law." *Id.* at 605 (emphasis added). The second duty (the "Reporting Duty") requires the Director to "set forth *that process* in sufficient detail that a condemned inmate and his attorneys may understand whether there is a basis for challenging the constitutionality of the impending execution."[10] *Id.* (emphasis added).

The *Owens* court elucidated the scope of the Director's duties by providing "two extreme examples":

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[10] It is worth emphasizing that, as indicated by the italicized language, the Reporting Duty is limited to describing the process *that the Director actually used to satisfy himself* that the drugs were satisfactory for their purpose. *Id.* at 604–05. Thus, the Reporting Duty does not require him to report facts that were not part of his basis for concluding that the drugs were satisfactory. Also, the *Owens* court made clear that the Director is required to comply with the Shield Statute in making his certification. *Id.* at 605.

> First, if the Director certified in the affidavit he made the determination the drugs were sufficient by accepting the word of an unnamed person with unknown qualifications—which we are sure Stirling would not do—the determination would clearly be insufficient. On the other hand, if the Director certified in the affidavit that scientists at the Forensic Services Lab of [SLED], whose experience and qualifications were verified by the Director and the Chief of SLED, recently performed testing according to widely accepted testing protocols and found the drugs were not only stable, but of a clearly acceptable degree of purity, then we doubt there could be any legitimate legal basis on which to mount a challenge.

Id. However, the court "decline[d] to offer further particulars on where between these extremes the Director's explanation must fall," explaining that "*that is initially for the Director to decide.*"[11] *Id.* (emphasis added).

The state supreme court's final interpretation and application of the Statute that is relevant here is its decision rejecting Owens's objections to Stirling's certification concerning Owens's execution methods. [Doc. 1-8.] Stirling had certified, as is relevant here:

> 10. I am certifying that lethal injection is available via a single dose of pentobarbital. I have confirmed that the pentobarbital in [SCDC's] possession is of sufficient potency, purity, and stability to carry out an execution successfully using [SCDC's] lethal injection protocol. [SCDC] provided pentobarbital to [SLED] for testing by its Forensic Services Laboratory. SLED confirmed that its Forensic Services Laboratory is an internationally accredited forensic laboratory and that it used widely accepted testing protocols and methodologies in this

[11] The court added that if an objection to the sufficiency of the Director's explanation is made, the court "will promptly decide if the challenge warrants relief." *Owens*, 904 S.E.2d at 605. Defendants argue that, unlike Owens, Plaintiff did not object to the Director's certification in his case. [Doc. 18 at 9.] Defendants maintain that because Plaintiff "chose not to pursue the avenue of relief in the state courts, he cannot complain now that the state did not provide adequate procedures." [Doc. 18 at 9–10 (cleaned up) (quoting *Tri Cnty. Paving, Inc. v. Ashe Cnty.*, 281 F.3d 430, 438 (4th Cir. 2002)).] Because the Court denies Plaintiff's Motion for the reasons discussed in this decision, the Court does not address this argument.

> matter. SLED reported to me that experienced, qualified, and duly authorized personnel tested two vials and confirmed the concentration of the solution provided is consistent with the vial labeling of pentobarbital, 50 milligrams per milliliter, and acknowledged the substance's concentration in terms of its purity and stability. The appropriate and responsible [SCDC] staff reported to me that, based on a review of SLED's test results, data published by National Institutes of Health, and information regarding executions by lethal injection using pentobarbital carried out by other States and the federal government, the dosage called for by [SCDC's] lethal injection protocol is sufficiently potent such that administration in accordance with the protocol will result in death.

[Doc. 1-4 ¶ 10.]

As noted, Owens argued that Stirling's certification violated Owens's statutory and due process rights insofar as it did not include the Additional Information and that, without that information, Owens and his counsel could not "assess or understand whether there [was] a basis for challenging the constitutionality of the impending execution" or "make an adequately informed election" concerning his execution method. [Doc. 1-6 at 4 (internal quotation marks omitted).] Accordingly, Owens requested that the state supreme court "enter an order instructing Director Stirling to provide the actual report and results from the testing of the lethal injection drugs intended for use in [Owens's] execution (with the identify of the analyst redacted) and documentation of the drugs' beyond use date and storage conditions." [*Id* at 5.] The state supreme court overruled Owens's objection, concluding:

> The affidavit adequately explains "how [Director Stirling] determined the drugs were of sufficient 'potency, purity, and stability' to carry out their intended purpose." [*Owens*, 904 S.E.2d at 605]. Further, the affidavit provides sufficient detail for [Owens] to make an informed election of his method of execution and for [him] and his attorneys to "understand whether there is a basis for challenging the constitutionality of the impending execution." [*Id.*]

[Doc. 1-8 (first alteration in original).]

This latest decision from the state supreme court definitively answers whether the Statute creates a liberty interest in the Director's providing the Additional Information as part of his certification. That decision makes clear that not only does the Statute not require *by explicitly mandatory language* that the Director provide the Additional Information—as would be required to create a liberty interest in having the information—the Statute does not require him to provide the information at all.[12] Because the Statute does not create a liberty interest in Plaintiff's being given the Additional Information as part of the Director's Reporting Duty, Plaintiff cannot show that he was deprived of any such interest.[13]

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[12] It is worth repeating that "[f]ederal courts look to decisions of the highest state court to determine whether there is a state-created liberty interest." *Feusi*, 2024 WL 2319790, at *7, and that "a State's highest court is the final judicial arbiter of the meaning of state statutes," *Gurley*, 421 U.S. at 208; *see also Winters*, 333 US. at 514; *Griffin*, 483 U.S. at 875.

[13] In his reply brief, Plaintiff argues that South Carolina created the right at issue in the Death Penalty Statute as interpreted by *Owens* to have the Director provide the Additional Information as part of his Reporting Duty and the state supreme court's subsequent overruling of Owens's objections to Stirling's certification is immaterial because the state had already created the liberty interest at issue. [Doc. 20 at 6–8.] Even assuming arguendo that this Court were limited to considering *Owens* in determining whether South Carolina created a liberty interest in the Director providing the Additional Information as part of his Reporting Duty, the result would be the same. That is so because neither the Statute nor *Owens* sufficiently limit the Director's discretion regarding what information he must provide as they would need to in order to "mandat[e] the outcome" that the certifications were insufficient. *Thompson*, 490 U.S. at 462. In fact, the "extreme example" that the *Owens* Court identified of a certification that the court "doubt[ed] there could be any legitimate legal basis [to] challenge" was nearly exactly what Stirling provided in his certifications. *Owens*, 904 S.E.2d at 605. *Compare id. with* Docs. 1-4 ¶ 10; 1-15 ¶ 10. And, indeed, the *Owens* court explicitly "declined to offer further particulars on" what information the Director needs to provide, explaining that "that is initially for the director to decide." *Owens*, 904 S.E.2d at 605.

Plaintiff's Interest in Choosing His Method of Execution

The other state-created liberty interest that Plaintiff alleges he was deprived of without adequate due process is the right to choose his method of election. However, Plaintiff has, in fact, been permitted to select his method of execution. Plaintiff nonetheless argues that the interest of which he was deprived is not the simple right to make the selection, but the "right to choose the least inhumane method of execution available." [Doc. 6 at 6.] In the Court's view, however, Plaintiff overstates the rights the Statute gives him. "The Statute gives him the right to choose his method of execution—period, not the right to discover what is, objectively, the best choice."[14] *Bixby I*, 2024 WL 4224081, at *7 (footnote omitted). Because Plaintiff has been given all of the information that the Death Penalty Statute entitled him to and he has been allowed to make the choice

[14] In adjudicating the state constitutionality of South Carolina's election provision, the *Owens* court noted that one benefit of being allowed to choose is that the inmate "may elect to have the State employ the method *he and his lawyers believe* will cause him the least pain." 904 S.E.2d at 608 (emphasis added). The *Owens* court noted that this ability to choose assures that "a condemned inmate in South Carolina will never be subjected to execution by a method *he contends* is more inhumane than another method that is available." *Id.* (emphasis added). In this case, Plaintiff has been allowed to do both of those things. He has been allowed to choose the execution method that he and his lawyers believe is best for him, using whatever criteria he preferred, based on the information available to him.

Plaintiff also argues that the Almgren Affidavit supports the proposition that the Additional Information could be of critical importance to him in deciding which execution method would be expected to be the least painful; that the chance of complications is increased by Plaintiff's unusually large body size; and that circumstances in Moore's execution "suggest that SCDC has already conducted at least one pentobarbital execution that inflicted unanticipated pain." [Doc. 6 at 8–12; *see* Doc. 1 ¶¶ 37–43.] All of these arguments tend to show only that the Additional Information could genuinely benefit Plaintiff; they do not tend to show that he has been deprived of a liberty interest *that the State has created*, as he would need to do to support the procedural due process claim that he has alleged. *See Bixby I*, 2024 WL 4224081, at *7 n.10.

that the Statute entitled him to make, he cannot show any deprivation of a state-created liberty interest.[15] *See Woods v. Dunn*, No. 2:20-cv-58-ECM, 2020 WL 1015763, at *12 (M.D. Ala. Mar. 2, 2020) (holding that Alabama's death penalty laws, which allow condemned prisoners to choose between death by lethal injection, electrocution, or nitrogen hypoxia, did not confer upon the prisoners the right to know, when making their election, that the Alabama Department of Corrections had not yet developed a protocol for performing nitrogen hypoxia executions; explaining that the only interest that Alabama's death penalty laws conferred was the opportunity to choose the execution method), *stay of execution denied*, 951 F.3d 1288 (11th Cir. 2020). Inasmuch as Plaintiff has not demonstrated any likelihood of success on the merits, he is not entitled to the injunctive relief he seeks.

CONCLUSION

Wherefore, based upon the foregoing, Plaintiff's motion for a temporary restraining order and for expedited briefing [Doc. 6] is DENIED.[16]

IT IS SO ORDERED.

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[15] For these same reasons that Plaintiff's claim fails to state a claim for relief under the Due Process Clause of the Fourteenth Amendment, the Complaint fails to state a claim that the Shield Statute violates Article I, Section 3 of the South Carolina constitution. *See Bixby II*, 2024 WL 4627451, at *14 n.18 ("South Carolina courts apply the same analysis to state and federal due process claims."); *Dangerfield v. State*, 656 S.E.2d 352, 354 (S.C. 2008) (applying federal due process law to claims under both the Fourteenth Amendment to the United States Constitution and Article I, Section 3 of the South Carolina constitution).

[16] In Plaintiff's Motion, Plaintiff requests that the Court establish expedited briefing and hearing schedules to address the matters in that motion and in the Complaint. [Doc. 6 at 20.] Because the Court concludes that Plaintiff has not made a showing that he is likely to succeed on the merits of his claim, the Court requires no further briefing or hearings regarding Plaintiff's Motion.

s/ Jacquelyn D. Austin
United States District Judge

January 28, 2025
Columbia, South Carolina

ATTACHMENT 2

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF SOUTH CAROLINA
No. 3:25-cv-00199-JDA

MARION BOWMAN, JR.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	**CAPITAL CASE**
	)	
BRYAN P. STIRLING, in his official capacity as the Director of the South Carolina Department of Corrections, and;	)	**EXECUTION SCHEDULED JANUARY 31, 2025**
	)	
HENRY DARGAN McMASTER, in his official capacity as Governor of the State of South of South Carolina,	)	
	)	
Defendants.	)	

DECLARATION OF JOSEPH F. ANTOGNINI, M.D., M.B.A.

JOSEPH F. ANTOGNINI, does hereby declare and say:

1. My name is Joseph F. Antognini. I am a medical doctor, board-certified in anesthesiology. I received a B.A. degree from the University of California, Berkeley in Economics in 1980. I received my M.D. degree from the University of Southern California in 1984. I also received an M.B.A. from California State University, Sacramento in 2010. I was previously the Director of Peri-operative Services at the University of California, Davis Health System and a Professor of Anesthesiology and Pain Medicine and Professor of Neurobiology, Physiology and Behavior at the University of California, Davis. I am licensed to practice medicine in the State of

California. I have over 30 years of experience practicing anesthesiology since 1984 when I began my residency at the University of California, Davis Health System. I am the author or co-author of over 200 publications (papers, abstracts, book chapters, etc.). My area of research has focused on anesthetic mechanisms, specifically related to where anesthetics produce unconsciousness, amnesia and immobility. I currently perform clinical research, and I am Chief Scientific Officer for a small pharmaceutical company that develops new anesthetics. A true and correct copy of my curriculum vitae is attached hereto as Exhibit A.

2. I have reviewed, and am familiar with, the allegations made in the Motion for Injunctive Relief, *Marion Bowman, Jr. v. Bryan P. Stirling and Henry Dargan McMaster*, No. 3:25-cv-00199-JDA, dated January 13, 2025, and additional information in the documents described below.

Scope of Engagement

3. I have been asked to render expert opinions in the fields of general medicine and anesthesiology, especially regarding the use, actions and efficacy of pentobarbital, in relation to South Carolina's lethal injection protocol, and the effectiveness of the procedures therein. This declaration contains a complete statement of my opinions, and the basis and reasons therefore, including the facts or data I have considered in forming them. I may supplement this declaration as appropriate. The opinions that I do

provide are within my field of anesthesiology and such fields as are necessarily related to anesthesiology, including general medicine, pharmacology and physiology, and fall within the scope of my expertise. All opinions expressed herein are stated to a reasonable degree of medical and scientific certainty unless otherwise noted.

Materials Reviewed

4. I have conferred with attorneys for Defendants. Among the documents I have reviewed in connection with this case are: South Carolina's execution protocol; Plaintiff's Motion for Injunctive Relief (dated January 13, 2025); publications and materials listed in the "References Cited" section; the declaration of Dr. David Waisel (dated January 10, 2025); the affidavit of Bryan P. Stirling, dated January 7, 2025; the affidavit of Dr. Michaela Almgren, dated August 31, 2024; and the autopsy report on Richard Moore.

5. Should additional documents or information be provided to me for review and analysis, I may take those additional materials into account, and modify and/or supplement my opinions accordingly. If I am present at hearings and/or trial in this case, I may take into account any testimony or other evidence to the extent related to my opinions and modify and/or supplement my opinions accordingly. In performing my analysis, I have relied on my professional training, education and experience. The opinions

presented in this declaration are my opinions and mine alone. I have reviewed and considered documents and information and identified those materials above. These documents and other information that I reviewed and considered are of a type reasonably relied upon by experts in the field of anesthesiology, general medicine, physiology and pharmacology in forming opinions or inferences on questions in this area. My fee schedule for this engagement is: $575/hour for phone consultation, research, declaration preparation; $675/hour for deposition; $7000/day for courtroom appearance; $287/hour for travel time plus travel expenses at cost.

6. I have testified and submitted expert reports in the following cases in the past four years: 1) I have submitted reports and given testimony *In the Matter of the Federal Bureau of Prisons' Execution Protocol Cases* (No. 19-mc-00145-TSC); 2) I have submitted reports and have testified in *Glossip et al. v. Chandler et al.*, Case No. CIV-14-665-F, in the United States District Court for the Western District of Oklahoma; 3) I have submitted reports and have testified in *Bigler Stouffer. v. Scott Crow*, Case No. 21-cv-1000-F, in the United States District Court for the Western District of Oklahoma; 4) I have submitted reports and have been deposed in *Terry Lynn King v. Tony Parker*, Case No. 3:18-cv-01234, in the United States District Court for the Middle District of Tennessee; 5) I have submitted reports and testified in *Michael Nance v. Oliver & Caldwell,* Case No. 1:20-CV-107-JPB, in the United States

District Court for the Northern District of Georgia, Atlanta Division; 6) I have submitted reports and testified in *Kenneth Eugene Smith v John Q. Hamm*, 2:22-cv-00497-RAH, in the United States District Court for the Middle District of Alabama; 7) I have submitted reports and been deposed in *Martin v Oliver & Caldwell,* 1:18-cv-4615-MLB in the US District Court, Northern District of Georgia, Atlanta Division; 8) I have submitted a report and been deposed in *Miller v. Marshall et al.* 2:24-cv-197 in the United States District Court for the Middle District of Alabama; 9) I have submitted a report and testified in *Grayson v. Hamm et al.,* 2:24-cv-00376-RAH-KFP in the United States District Court for the Middle District of Alabama.

Discussion

7. The intravenous administration of five (5) grams of pentobarbital causes rapid unconsciousness followed by respiratory arrest, cardiovascular collapse and death. After intravenous injection of 5 grams pentobarbital, concentrations of pentobarbital in the body will far exceed the lethal concentrations—see Table 1, package insert for pentobarbital in References Cited and extrapolating from data of Ehrnebo (1974). Once respiratory depression and respiratory arrest occurs within 1-2 minutes, the unconscious inmate then begins to use up the oxygen stores in his body. Before all the oxygen is used, however, the heart will be affected, will begin to slow and will then have periodic irregular beats. It likely will take several minutes before

the heart stops all together. At that point, death is declared. This process, as described, is irrefutable. It is based on the known actions of pentobarbital and sound pharmacological and physiological principles, and the known effects of these doses of pentobarbital in lethal injection executions.

8. Pentobarbital administered to humans results in unconsciousness in 20-30 sec, on average,[1] and this effect is dose dependent, with greater doses (>5 mg/kg) having onset times in the 20 sec range (Dundee, 1957). In a 100-kg person (about 220 pounds), this dose would be 500 mg, which is only 10% of the dose used in the South Carolina lethal injection protocol. At this point, pulmonary edema, if it occurs at all during the execution (as opposed to post-mortem lung changes), would not set in because it would only result from a much larger dosage (i.e. an overdose).[2] As the additional 4500 mg of pentobarbital is administered, the inmate would have progressive brain depression, with electrical brain silence occurring, followed by cardiovascular collapse, as noted above. Before becoming unconscious, the individual would not feel the sensations of pain, suffocation or air hunger. And the inmate

1 It is important to note that the time to unconsciousness depends on the speed with which the drug is administered and when the "clock starts". For example, my estimate for 20-30 sec is based on when a clinical dose of pentobarbital has actually entered the person, not when the drug begins to enter the IV tubing.
2 Clinical doses of barbiturates, such as thiopental and pentobarbital, cause unconsciousness, but not pulmonary edema. If clinical doses of these drugs caused pulmonary edema, the drugs would have been abandoned soon after their introduction in the 1930s.

would not feel the sensation of pain, suffocation or air hunger after becoming unconscious.

9. These actions of pentobarbital are consistent with data published by Aleman et al., (2015), a study discussed in the recent US Supreme Court case *Bucklew v. Precythe,* No. 17-8151 (decided April 1, 2019). In the Aleman study, horses were administered large, lethal doses of pentobarbital, with a mean time of infusion of 47 seconds, and the horses developed electroencephalographic brain silence (i.e., flat line) at a mean of 53 seconds after the initiation of the infusion, that is, EEG silence occurred on average, 6 seconds after the infusion finished. Because loss of consciousness occurs before EEG silence, these data fit with a time frame of 20-30 seconds for loss of consciousness after the initiation of the pentobarbital infusion.

10. In a similar study (Buhl et al., 2013), the time to collapse (when the horses went from standing to falling to the ground, and which is considered to be the onset of unconsciousness) was about 27 seconds (the average of the means of the four groups studied; see their table 2) after the initiation of the infusions. They also noted that respiratory arrest occurred simultaneously with falling to the ground in most horses (2nd paragraph in discussion).

11. These studies cited above collectively lead to the conclusion that intravenous pentobarbital administered at 5 grams would cause rapid onset

of unconsciousness, followed by coma, respiratory arrest, circulatory collapse and death.

12. Thiopental and pentobarbital are equipotent (Barron & Dundee, 1961). For example, 100 mg of thiopental has the same effect as 100 mg of pentobarbital, 500 mg of thiopental has the same effect as 500 mg of pentobarbital, and so forth. Thus, studies reporting on the effects of thiopental can be used to infer the effects of pentobarbital.

13. Both thiopental and pentobarbital cause brain suppression (including suppression of electrical activity in the brain as measured with the electroencephalogram, EEG). The dose at which EEG silence begins to occur is about 17 mg/kg, based on studies utilizing thiopental infused over 10-15 minutes (Buhrer et al., 1992; Hung et al., 1992). But, in the setting of an execution, pentobarbital would be infused more quickly and at a greater dose than that described in Buhrer et al. Five (5) grams (equivalent to 5000 mg) of pentobarbital administered to a 100-kg person (approximately 220-lbs person) is 50 mg/kg, and about 71 mg/kg in a 70 kg person, doses that far exceed 17 mg/kg. Thus, EEG silence would be expected to occur within 60 seconds after initiation of pentobarbital infusion, consistent with the data reported by Aleman et al.

14. The State of Georgia has executed at least 24 inmates in the past decade using pentobarbital, and these times to death were submitted as evidence in *Martin v. Ward & Ford*, No. 1:18-cv-04617-MLB, in which both Dr Waisel and I were expert witnesses.[3] The times between initiation of pentobarbital infusion and time of death reported for 24 executions ranged from 8 to 27 minutes, with an average of about 14 minutes. These times comport with what I would expect with 5 grams of pentobarbital administered according to the South Carolina protocol. The longer times between pentobarbital administration and time of death are most likely related to the process by which death is declared related to cessation of electrical heart activity. The electrocardiogram (ECG) measures electrical heart activity and in the process of dying the heart may have occasional electrical activity for many minutes after complete cardiovascular collapse and respiratory arrest. The amount of time it takes for the heart to stop can be variable, so the ranges reported for these 24 executions are not surprising and do not indicate any problems with the way in which the Georgia protocol is implemented.[4,5]

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3 Dr. Waisel considered and discussed these times in his May 10, 2024 report submitted to the Court, as did I in my report dated April 10, 2024.

4 Also, during an execution there is an additional variable amount of time between when the heart stops beating and when time of death is determined. The physician must wait a variable amount of time after the last heartbeat to ensure he or she has actually observed the "last" heartbeat. This time might be 1-2 minutes or longer, depending on the physician. Then, the physician enters the chamber, examines the inmate for signs of life, and declares the time of death.

5 The Georgia method of lethal injection execution and the South Carolina method are similar

15. In the Aleman study, horses administered pentobarbital developed asystole (cessation of the heartbeat) in the range of 5.5 to 16.3 minutes (a ratio 16.3/5.5 ≈ 3), and in the Buhl study the range was 3.3 to 20 minutes (based on the data in their Figure 2; ratio 20/3.3 ≈ 6). The ratio of the times to death (longest/shortest) in the 24 executions is 27/8 ≈ 3.4, like those found in the Aleman and Buhl studies. Taken together, these execution times and the animal studies indicate that variability is the norm, not the exception.

16. Intravenous administration of 5 grams of pentobarbital would cause profound brain depression and unconsciousness well before any lung congestion and pulmonary edema forms.

17. Whether pentobarbital causes pulmonary edema directly, or indirectly as a natural consequence of the dying process, is immaterial because the inmate would be profoundly unconscious, to the point of electrical brain silence. Furthermore, it is unclear how much of the pulmonary edema and lung congestion found at autopsy is due to post-mortem changes.

18. More recent studies in humans using post-mortem computed tomography (PMCT) show that fluid accumulates in lung over time in the post-mortem period (Shiotani et al., 2011). Shiotani et al. write in their concluding paragraph: "PMCT findings of the lung are not fixed and change

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regarding procedures and administration of pentobarbital.

with the passage of time after death in accordance with progression of postmortem changes (pulmonary congestion and edema) in the corpse."

19. Likewise, fluid accumulation in the airways increases during the post-mortem period (Ishida et al. 2014); these authors showed that fluid accumulated in the airways (main bronchi) as the interval between death and PMCT increased. This fluid accumulation is akin to the fluid that has been found at autopsy in inmates executed by lethal injection.

20. Published data on how post-mortem pulmonary edema and lung congestion occur and progress is based in large part on animal studies. Durlacher et al. (1950) examined post-mortem changes in rabbit lungs after various causes of death, including pentobarbital overdose. They found that lung weight increased as the time between pentobarbital-induced death and autopsy increased, as shown in their table 2:

TABLE 2

EFFECT OF INTERVAL AFTER SACRIFICE BY NEMBUTAL (100 MG./KG.) ON LUNG WEIGHT

Interval after sacrifice	*Treatment*	*Number of animals*	*Lung weight per kilo ± S.E. mean*
			Grams
Immediate		5	3.83 ± .27
1 hours	Cannula in trachea	5	5.42 ± .58
2 hours	Cannula in trachea	5	7.09 ± 1.39
3 hours	Cannula in trachea	19	9.46 ± .62
4 hours	Cannula in trachea	5	10.88 ± 1.53
6 hours	Cannula in trachea	5	10.95 ± .74

Note that lung weight increased when comparing lung weight at immediate autopsy to lung weight at 1, 2, 3, 4 and 6 hours after death, indicating that

lungs can develop edema *after* death. These researchers (and others[6]) also found that, for a variety of causes of death, lung weight increased as the interval between death and autopsy increased (see table 1 in Durlacher et al., 1950). These data indicate that post-mortem edema formation is a generalized phenomenon and is not specific to drug overdose Thus, the animal data indicate that all of the pulmonary edema and lung congestion found at autopsy in inmates executed by lethal injection could be generated post-mortem.

21. Frothy fluid and foam are sometimes found in humans and animals after death, and there is evidence that this froth can occur immediately prior to death (in the period from apnea to cardiac death; see Swann 1964) and after death.[7] Thus, the finding of froth in inmates who were executed by lethal injection does not indicate that this froth was generated ante-mortem.

22. Post-mortem froth and foam could be generated by the release of gasses from the lung tissues and interacting with the lung surfactant, a substance that, during life, keeps alveoli (small lung units, or air sacs) open. Related to this issue, Pattle (1955) wrote that "....oedema foam is thus not produced by

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[6] See Acta Scandinavica Medica 1964 in References Cited

[7] Animals (rabbits) made uremic (kidney failure) and who subsequently developed pulmonary edema were found to not only have increasing lung weights as the period between death and post-mortem exam increased, but the presence of froth was found in animals that had later post-mortem exams, while none was found upon immediate post-mortem examination. See Acta Scandinavica Medica 1964 in References Cited

agitation of the oedema fluid with air during respiration; it can only have been formed by air originally in the fine air spaces of the lung being broken up into bubbles and afterwards expelled into the bronchi and trachea." Thus, the post-mortem finding of froth in inmates who were executed by lethal injection does not conclusively indicate that this froth was generated ante-mortem, or by conscious attempts to breathe.

23. The presence of pulmonary edema at autopsy is a common and non-specific finding and is associated with variety causes of death (Saukko & Knight, 2004; Sogawa et al., 2014).[8]

24. The witnesses to the executions of Freddie Owens and Richard Moore describe what would be expected from lethal injection of pentobarbital (see links to the press conferences cited in the References section). In the Owens execution, Owens appeared to be conscious for about 1-1.5 minutes after initiation of the pentobarbital, followed by deep breathing akin to snoring, then shallow breathing. No movement occurred after about 6 minutes following the initiation of the pentobarbital. In the Richard Moore execution, several deep breaths started about 1 minute following the initiation of the pentobarbital, followed by shallow breathing, with no movement observed

8 Saukko & Knight: Knight's Forensic Pathology, 3rd Edition, page 356: "Pulmonary oedema is such a common and non-specific phenomenon in a whole range of fatal conditions that it has little diagnostic significance."

after about 3 minutes. These observations comport with what I would expect to occur following a lethal dose of pentobarbital.

25. In his declaration Dr. Waisel lists several opinions that are not well-founded and are based on faulty reasoning and erroneous interpretation of the data and events.[9] In section V.7 of his declaration, he opines that a properly administered dose of pentobarbital should eliminate breathing in less than one minute, but he ignores important factors. For example, the speed with which the drug is administered impacts responses to the drug, with slower administration causing longer times for drug effects to occur. Also, the presence of agonal breaths, which are the last "gasps" that a person or animal takes immediately prior to death, prolongs the time to apnea (lack of breathing). In my opinion, breathing efforts can occur for a few minutes after the pentobarbital has been administered, however, these breathing efforts will become shallow in the few minutes after drug administration.

26. In section V.8 Dr. Waisel states that it is "physiologically and pharmacologically impossible for Mr. Moore to remain alive for ten minutes after a dose of five grams of fully-potent pentobarbital, unless that dose was not delivered completely". Dr. Waisel completely ignores the expected effect of

9 As an aside, Dr. Waisel discusses in section V.2 of his declaration the hypothetical administration of a barbiturate at a dose of 350 mg/kg, which is clearly a typographical error. But because the reader is left wondering what dose he meant to write, Dr. Waisel's reasoning is further muddled.

the pentobarbital and the practical aspects of the execution process. As outlined above, the heart can have occasional beats for many minutes after pentobarbital is administered (as long as 20 minutes between drug administration and loss of cardiac electrical activity—see Buhl et al., 2013). While the inmate is deeply unconscious, the person who declares death will not do so until a waiting period after the electrocardiogram is "flatline", e.g., there is no electrical activity of the heart.

27. In section V.9, Dr. Waisel opines that Mr. Moore "consciously experienced feelings of drowning and suffocation during the 23 minutes that it took to bring about his death". Dr. Waisel completely ignores the effects of the lethal doses of pentobarbital used. Dr. Waisel expects the reader to believe that the massive dose of pentobarbital will not cause unconsciousness but will result in "sudden" death at minute 23. If Mr. Moore was conscious and drowning in his own fluids then why didn't he move prior to minute 23? Why didn't he breathe fast, as would be expected if he was awake and had pulmonary edema? The answer to both questions is that Mr. Moore was profoundly unconscious from the pentobarbital.

28. Dr. Waisel also questions the need for an additional 5-grams of pentobarbital in the Moore execution. As noted above, it would not be unexpected that some electrical activity of the heart persisted after 10

minutes, so a second 5-gram injection was probably used for that reason. The witnesses to the Moore execution reported that Mr. Moore did not move after about 3 minutes, so Mr. Moore likely was profoundly unconscious at that point. Also, the pentobarbital concentration found in Mr. Moore at autopsy (85 mcg/ml) greatly exceeded the lethal level.[10] In the 24 Georgia executions using 5-grams pentobarbital, the mean pentobarbital concentration at autopsy was 38 mcg/ml, so the 85 mcg/ml level found in Mr. Moore is consistent with the administration of a 10-gram dose of pentobarbital, which refutes Dr. Waisel's claim that an insufficient amount of pentobarbital was administered.[11]

29. In section V.11 Dr. Waisel states that intravenous access in obese persons might be difficult, but this is true for any patient, and thousands of obese patients have surgery every day after the successful placement of an intravenous catheter.

Conclusion

30. It is my opinion, to a reasonable degree of medical and scientific certainty, that 1) the inmate would become unconscious within 20-30 sec after pentobarbital first enters the inmate, which would be followed by respiratory arrest, cardiovascular collapse and death; 2) injection of massive

10 The package insert states that 10-15 mcg/ml causes coma, while 15-40 mcg/ml is lethal.
11 In his report of May 10, 2024, Dr. Waisel states he reviewed the toxicology data for these executions.

doses (5 grams) of pentobarbital would not inflict mild, moderate or severe pain; 3) pulmonary edema, if it occurs ante-mortem, would not be perceived by the inmate because of the profound brain suppression caused by pentobarbital.

31. Should additional information become available I reserve the opportunity to amend my statements herein.

Date: January 21, 2025

Joseph F. Antognini, M.D., M.B.A.

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Press conference following execution of Richard Moore on November 1, 2024 (accessed January 18, 2025):

Witnesses speak after execution of South Carolina inmate Richard Moore

Press conference following execution of Freddie Owens on September 20, 2024 (accessed January 18, 2025):

FULL PRESS CONFERENCE Freddie Owens Execution: 9.20.2024

Pentobarbital package insert (accessed 1-21-2025):

https://dailymed.nlm.nih.gov/dailymed/fda/fdaDrugXsl.cfm?setid=e9f4b344-

b092-4eec-b49d-d8cfe8ebc05d&type=display

EXHIBIT A

CURRICULUM VITAE
Joseph F. Antognini, M.D., M.B.A.

CONTACT:

jfantognini@icloud.com

jfantognini@ucdavis.edu

EDUCATION:

1980	University of California, Berkeley (B.A., Economics)
1984	University of Southern California (M.D., Medicine)
2010	California State University, Sacramento (M.B.A., Business)

INTERNSHIP/RESIDENCY:

1984-1987	Anesthesiology, UC Davis Medical Center
1986-1987	Chief Resident

PROFESSIONAL POSITIONS:

6/24-present	Chief Scientific Officer/Interim Chief Medical Officer Expanesthetics, Inc Davis, CA
1/22-present	Principal Investigator Next Level Clinical Trials, LLC West Covina, CA
1/22-present	Sub-Investigator SmartCures Clinical Research, LLC Anaheim, CA
7/22-present	Sub-Investigator Long Beach Clinical Trials, LLC Long Beach, CA

7/17-present	Director Emeritus University of California, Davis
2015-present	Clinical Advisory Board Expanesthetics, Davis, CA
9/21-7/23	Surgical Wound Specialist Advantage Surgical and Wound Care El Segundo, CA
1/20-12/22	Adjunct Faculty Los Medanos College Pittsburg, CA
1/20-5/20	Adjunct Faculty Holy Names University Oakland, CA
9/16-11/19	Physician Surveyor The Joint Commission Oakbrook Terrace, IL
2011-2020	Clinical Professor of Anesthesiology and Pain Medicine (Volunteer Clinical Faculty appointment) University of California, Davis—School of Medicine
11/10-6/16	Director of Peri-operative Services UC Davis Health System
7/00-7/11	Professor of Anesthesiology and Pain Medicine12 (with tenure) Department of Anesthesiology and Pain Medicine University of California, Davis—School of Medicine
12/02-7/11	Professor of Neurobiology, Physiology and Behavior (with tenure; WOS appointment) College of Biological Sciences

12 My research publications place me in the top 1.5% of scientists worldwide based on number of citations of my papers (October 2023 data-update for "Updated science-wide author databases of standardized citation indicators" - Elsevier BV (digitalcommonsdata.com) accessed 5-17-2024). Also, I am in the category of "outstanding scientist" based on the h-index (h-index = 42 as of 1-9-25, with >5600 citations according to Google Scholar). The h-index is a measure of how often a person's work is cited. See: Hirsch JE. An index to quantify an individual's scientific output. PNAS 2005; 103:16569-572

	University of California, Davis
11/98-7/10	Vice Chairman, Director of Research
11/98-3/02	Director of Malignant Hyperthermia Diagnostic Laboratory Department of Anesthesiology
7/96-7/00	Associate Professor (with tenure) Department of Anesthesiology University of California, Davis—School of Medicine
10/91-6/96	Assistant Professor Department of Anesthesiology University of California, Davis—School of Medicine
7/87-9/91	Staff Anesthesiologist (Private Practice) American River Hospital Department of Anesthesiology Carmichael, CA
7/87-9/91	Assistant Clinical Professor (volunteer) Department of Anesthesiology University of California, Davis—School of Medicine

LICENSURE & CERTIFICATIONS:
State of California #G55662 (expires 7-31-2025)
State of Georgia #100252 (expires 7-31-2025)
DEA certificate BA0948870 (expires 6-30-2027)
Diplomate, National Board of Medical Examiners (1985)
Diplomate, American Board of Anesthesiology (1989; Life-time, not time limited)
Certificate of Recertification, American Board of Anesthesiology (1999, 2009)
Certified Yellow Belt, 2017

PROFESSIONAL SOCIETIES AND RECOGNITION:
American Society of Anesthesiologists 1987--present
California Society of Anesthesiologists 1987—present
Fellow of the American Society of Anesthesiologists 2018—present

ADVOCACY
ASA Grassroots Network (ASA Team 535) 2018
ASAPAC Donor—2018
FAER Donor—1999-2022

RESEARCH INTERESTS:

Mechanisms of anesthesia; factors influencing anesthetic requirements; OR efficiency

AWARDS AND HONORS

Dean's Mentoring Award, UC Davis School of Medicine, 2006
Associated Students of UC Davis "Excellence in Education Award" College of Biological Sciences, 2007
Associated Students of UC Davis "Excellence in Education Award" Outstanding Educator, 2007
Foundation for Anesthesia Education and Research, Mentor Academy, 2008
Phi Kappa Phi Honor Society, 2010

GRANTS

1. UC Davis Faculty Research Grant 1991-92—The effect of intrathecal aspirin on anesthetic requirements in rabbits, $2500
2. UC Davis Faculty Research Grant 1993-94—Validation of a preferentially anesthetized goat brain model, $1500
3. Foundation for Anesthesia Education and Research 1994—Determination of gross anatomic sites of anesthetic action, $25,000 ($25,000 matching departmental funds)
4. UC Davis Faculty Research Grant 1994-95—The effects of general anesthesia on cerebral blood flow patterns as assessed by functional magnetic resonance imaging, $1500
5. UC Davis Faculty Research Grant 1996-97—The effect of differential isoflurane delivery to brain and spinal cord on inhibitory and excitatory output from the brain, $10,000
6. Foundation for Anesthesia Education and Research 1997-99—The effect of differential isoflurane delivery to brain and spinal cord on inhibitory and excitatory output from the brain, $70,000 ($70,000 matching departmental funds)
7. NIH R01 GM57970 Brain and Spinal Cord Contributions to Anesthetic Action 8/98-4/02 (Priority Score 120, Percentile 1.0). Total costs $713,026
8. NIH R01 GM61283 Anesthetic Effects on Sensorimotor Integration 2/01-2/06 (Priority Score 194, Percentile 16.9). Total costs $672,791
9. U.C. Davis Faculty Research Grant. Indirect effect of isoflurane and lidocaine on EEG activation. 7/1/01-6/30/02, $4,000
10. NIH R01 GM57970-4A1 Brain and Spinal Cord Contributions to Anesthetic Action 4/02-12/05 (Priority Score 197, Percentile 20). Total costs $1,284,689
11. NIH 3R01GM057970-05S1 Brain and Spinal Cord Contributions to Anesthetic Action. Minority Supplement grant. 7/03-7/04. Total costs $55,932
12. NIH P01 GM47818 Anesthetic Effects on Spinal Nociceptive Processing 8/04-7/09 (Priority Score 185). Total costs $804,325
13. NIH R01 GM61283A1 Anesthetic Effects on Sensorimotor Integration 12/05-12/9 (Priority Score 158, Percentile 9). Total costs $748,432

TEACHING

Post-Graduate:

1. Resident lectures on neuroanesthesia, anesthetic mechanisms, malignant hyperthermia, neuromuscular blocking drugs, volatile anesthetics, anesthesia research. 1991-2019
2. Anesthesiology Department Journal Club 2013-2016
3. UCSF Changing Practice of Anesthesia—Faculty. September 2014: Peri-operative Medicine and Healthcare Reform: Challenges and Opportunities for Anesthesiology

Graduate:

Guest lecturer for NPB 219 (E. Carstens, Instructor). 1998-2003

Guest lecturer for NPB 112 (E. Carstens, Instructor). 2001-2008

Guest lecturer for first year medical students—pain physiology 2002-2003

Facilitator, Application of Medical Principles 2002-2008

Guest Lecturer, 210B (Systemic Physiology) January 2006

Instructor of Record, Applied Physiology and Pharmacology 2007, 2008

Undergraduate:

NPB 10—Elementary Human Physiology (4 units). 2001-2009

Freshman Seminar: The Supreme Court and You. (2 units) 1998-2010

Human Physiology (Los Medanos College) 2020

Biology of Health (Los Medanos College) 2020-22

Epidemiology (Holy Names University) 2020

MENTORED STUDENTS, RESIDENTS AND POST-DOCTORAL SCHOLARS

1.	Kevin Schwartz, M.D.	Resident	1993
2.	Michael Borges, M.D	Resident	1994
3.	Agi Melton, M.D.	Resident	1994
4.	Etsuo Tabo, M.D.	Post-Doctoral Scholar	1997
5.	Steven Jinks	Graduate Student	1998-2001
6.	Chris Simons	Graduate Student	1998
7.	Xiao Wei Wang, M.D.	Post-Doctoral Scholar	1999
8.	Xiaoguang Chen, M.D.	Post-Doctoral Scholar	2000
9.	Makoto Sudo, M.D.	Post-Doctoral Scholar	2000
10.	Satoko Sudo, M.D.	Post-Doctoral Scholar	2000
11.	Alison Fitzgerald	Undergraduate Student	2000-2001
12.	Andrew Hall	Undergraduate Student	2001

13. John Martin, M.D.	Resident	2001
14. Steve Jinks, PhD.	Post-Doctoral Scholar	2001-2004
15. Jason Cuellar, BS	Graduate Student	2003-2004
16. Linda Barter, MsVM	Graduate Student	2004-2007
17. Mashawn Orth	Graduate Student	2004-2005
18. Carmen Dominguez, MD	Assistant Professor	2003-2005
19. Lauire Mark	Undergraduate Student	2005-2006
20. Matthew LeDuc	Medical Student	2005
21. Toshi Mitsuyo, M.D.	Post-Doctoral Scholar	2004-2005
22. Kevin Ng, M.D.	Resident	2005-2006
23. JongBun Kim, M.D.	Post-Doctoral Scholar	2006
24. Sean Shargh	Undergraduate Student	2006-2007
25. Aubrey Yao, M.D.	Resident	2006-2007
26. Alana Sulger	Undergraduate Student	2006-2007
27. Gudrun Kungys, M.D.	Resident	2007-2008
28. Jason Talavera	Medical student	2007
29. Onkar Judge	Medical student	2008
30. Andrew Cunningham	Undergraduate Student	2008
31. Lauren Boudewyn	Undergraduate Student	2008
32. Austin Kim	Undergraduate Student	2008
33. Jason Andrada	Graduate Student	2009-2010
34. Jun Ye	Graduate Student	2014-2015
35. Reihaneh Forghany	Resident/Faculty	2018-2021

SPECIAL ACTIVITIES:

Staff Anesthesiologist, American River Hospital, 1987-1992

Medical Advisor, CMT International (Charcot-Marie-Tooth), 1991-2000

Director, Case Conferences, Department of Anesthesiology, April-June, 1992

Proctor, Medical Board of California, 1992

Staff Membership, Sutter Davis Hospital, Davis, CA, 1992-1995

Consultant, Malignant Hyperthermia Hotline, Malignant Hyperthermia Association of the United States (MHAUS), 1992-2002

Associate, UC Davis Diagnostic Malignant Hyperthermia Laboratory, 1992-2010

Member, Subcommittee on Experimental Neuroscience and Biochemistry, American Society of Anesthesiologists, 1996

Finance and Executive Committees, UC Davis Department of Anesthesiology, 1996-2002

Quality Assurance Committee, U.C. Davis Department of Anesthesiology, 1998-2004

Course Director, Annual U.C. Davis Anesthesiology Update (CME meeting), 1996-2003
California Society of Anesthesiologists: Educational Programs Committee, 1998-2000

Coordinator, Grand Rounds, Department of Anesthesiology, 1996

Professional Billing Workgroup, U.C. Davis, 1996-98

Question Writer, American Board of Anesthesiology, 1998-2001

Member, UC Davis Animal Care Committee, 2000-2003

Member, UC Davis School of Medicine Personnel Committee, 2003—2007; Chair 2007

Member, UCD Committee on Academic Personnel (Appellate Sub-committee) 2009-11

Management Advisory Committee, Department of Anesthesiology, 2007

Ad Hoc Reviewer for *Anesthesiology, Hospital Topics, Journal of Clinical Anesthesia, Journal of Comparative Neurology, Regional Anesthesia and Pain Medicine, Pain, Brain Research, Journal of Neuroscience, Anesthesia and Analgesia, British Journal of Anaesthesia, Neuroscience, Cephalgia, Neuroscience Letters, Journal of Chromatography, Basic & Clinical Pharmacology & Toxicology, Therapeutics and Clinical Risk Management.*

Member, VA Merit Review Subcommittee, Alcohol and Drug Dependence, 2002-2005

Editor, American Board of Anesthesiology/ American Society of Anesthesiologists In-Training Examination 2003-2008

Associate Editor, *Anesthesiology* 2005—2011

Faculty Executive Committee, School of Medicine 2009-2010

Chair, Faculty Executive Committee, School of Medicine 2010-2011

Member of various hospital committees 2011-2016: Medical Staff Executive Committee, Quality Safety Committee, OR Committee, Surgical Services Steering Committee, Hospital Billing Group

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EDITED BOOKS

1. Antognini JF, Carstens EE, Raines DE. Neural Mechanisms of Anesthesia,

Humana Press, Totowa, NJ, 2002.

PUBLICATIONS

1. Antognini JF. Anaesthesia for Charcot-Marie-Tooth disease: a review of 86 cases. Canadian Journal of Anaesthesia 1992; 39(4):398-400.

2. Antognini JF and ND Kien. Cardiopulmonary bypass does not alter canine enflurane requirements. Anesthesiology 1992; 76:953-957.

3. Antognini JF. Intrathecal acetylsalicylic acid and indomethacin are not analgesic for a supramaximal stimulus. Anesthesia and Analgesia 1993; 76:1079-1082.

4. Antognini JF. Hypothermia eliminates isoflurane requirements at 20°C. Anesthesiology 1993; 78:1152-1156.

5. Antognini JF and GA Gronert. Succinylcholine causes profound hyperkalemia in hemorrhagic, acidotic rabbits. Anesthesia and Analgesia 1993; 77:585-588.

6. Melton AT, JF Antognini and GA Gronert. Prolonged duration of succinylcholine in patients receiving anticonvulsants: evidence for mild up-regulation of acetylcholine receptors? Canadian Journal of Anaesthesia 1993; 40(10):939-942.

7. Antognini JF and K Schwartz. Exaggerated anesthetic requirements in the preferentially anesthetized brain. Anesthesiology 1993; 79:1244-1249.

8. Antognini JF and PH Eisele. Anesthetic potency and cardiopulmonary effects of enflurane, halothane, and isoflurane in goats. Laboratory Animal Science 1993; 43(6):607-610.

9. Antognini JF. Splanchnic release of potassium after hemorrhage and succinylcholine in rabbits. Anesthesia and Analgesia 1994; 78:687-690.

10. Antognini JF, M Anderson, M Cronan, JP McGahan and GA Gronert. Ultrasonography: not useful in detecting susceptibility to malignant hyperthermia. Journal of Ultrasound in Medicine 1994; 13:371-374.

11. Antognini JF and ND Kien. A method for preferential delivery of volatile anesthetics to the *in situ* goat brain. Anesthesiology 1994; 80:1148-1154.

12. Antognini JF, BK Lewis and JA Reitan. Hypothermia minimally decreases nitrous oxide anesthetic requirements. Anesthesia and Analgesia 1994; 79:980-982.

13. Borges M and JF Antognini. Does the brain influence somatic responses to noxious stimuli during isoflurane anesthesia? Anesthesiology 1994; 81:1511-1515.

14. Antognini JF and ND Kien. Potency (minimum alveolar anesthetic concentration) of isoflurane is independent of peripheral anesthetic effects. Anesthesia and Analgesia 1995; 81:69-72.

15. Antognini JF and K Berg. Cardiovascular responses to noxious stimuli during isoflurane anesthesia are minimally affected by anesthetic action in the brain. Anesthesia and Analgesia 1995; 81:843-848.

16. Antognini JF. Creatine kinase alterations after acute malignant hyperthermia episodes and common surgical procedures. Anesthesia and Analgesia 1995; 81:1039-1042.

17. Gronert GA, NW Fleming and JF Antognini. Aberrant responses to muscle relaxants produced by diseases or drugs. Seminars in Anesthesia 1995; 14(4):283-290.

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19. Antognini JF and K Mark. Hyperkalaemia associated with haemorrhagic shock in rabbits: modification by succinylcholine, vecuronium and blood transfusion. Acta Anaesthesiologica Scandinavica 1995; 39:1125-1127.

20. Antognini JF, R Wood and GA Gronert. Metocurine pharmacokinetics and pharmacodynamics in goats. Journal of Veterinary Pharmacology and Therapeutics 1995; 18:464-467.

21. Antognini JF. Movement associated with high cerebral concentrations of isoflurane: no evidence of seizure activity. Canadian Journal of Anaesthesia 1996; 43(3):310-314.

22. Antognini JF and GA Gronert. Extra-junctional receptors and neuromuscular blocking drugs. Current Opinion in Anaesthesiology 1996; 9:344-347.

23. Kien ND, JF Antognini, DA Reilly and PG Moore. Small-volume resuscitation using hypertonic saline improves organ perfusion in burned rats. Anesthesia and Analgesia 1996; 83:782-788.

24. Fleming NW, S Macres, JF Antognini and J Vengco. Neuromuscular blocking action of suxamethonium after antagonism of vecuronium by edrophonium, pyridostigmine or neostigmine. British Journal of Anaesthesia 1996; 77:492-495.

25. Antognini JF, PH Eisele and GA Gronert. Evaluation for malignant hyperthermia susceptibility in black-tailed deer. Journal of Wildlife Diseases 1996; 32(4): 678-681.

26. Antognini JF. The relationship among brain, spinal cord and anesthetic requirements. Medical Hypotheses 1997; 48:83-87.

27. Antognini JF and GA Gronert. Continued puzzles in malignant hyperthermia. Journal of Clinical Anesthesia 1997; 9:1-3.

28. Antognini JF and GA Gronert. Effect of temperature variation (22°C-44°C) on halothane and caffeine contracture testing in normal humans. Acta Anaesthesiologica Scandinavica 1997; 41: 639-642.

29. Antognini JF, MH Buonocore, EA Disbrow and E Carstens. Isoflurane anesthesia blunts cerebral responses to noxious and innocuous stimuli: a fMRI study. Life Sciences 1997; 61:PL349-354.

30. Antognini JF. Isoflurane potentiates metocurine via peripheral not central nervous system action. Journal of Veterinary Anaesthesia 1997; 24:6-9.

31. Disbrow E, M Buonocore, J Antognini, E Carstens and HA Rowley. The somatosensory cortex: a comparison of the response to noxious thermal, mechanical and electrical stimuli using functional magnetic resonance imaging. Human Brain Mapping 1998; 6:150-59.

32. Antognini JF, E Carstens, E Tabo and V Buzin. Effect of differential

delivery of isoflurane to head and torso on lumbar dorsal horn activity. Anesthesiology 1998; 88:1055-61

33. Antognini JF, E. Carstens. A simple, quantifiable, and accurate method for applying a noxious mechanical stimulus. Anesthesia and Analgesia 1998; 87:1446-9.

34. Antognini JF, S. Jinks, V. Buzin, E. Carstens. A method for differential delivery of intravenous drugs to the head and torso of the goat. Anesthesia and Analgesia 1998; 87:1450-2.

35. Antognini JF, E. Carstens. Macroscopic sites of anesthetic action: brain versus spinal cord. Toxicology Letters 1998; 100-101:51-58.

36 Antognini JF, E Carstens. Increasing isoflurane from 0.9 to 1.1 minimum alveolar concentration minimally affects dorsal horn cell responses to noxious stimulation. Anesthesiology 1999; 90:208-14.

37. Antognini JF, E Carstens, V Buzin. Isoflurane depresses motoneuron excitability by a direct spinal action: an F-wave study. Anesthesia and Analgesia 1999; 88:681-5.

38. Jinks S, JF Antognini, E Carstens V Buzin, C Simons. Isoflurane can indirectly depress lumbar dorsal horn activity via action within the brain. British Journal of Anaesthesia 1999; 82:244-49

39. Antognini JF, XW Wang. Isoflurane can indirectly depress auditory evoked potentials by action in the spinal cord. Canadian Journal of Anaesthesia 1999; 46:692-95

40. Melton AT, JF Antognini, GA Gronert. Caffeine- or halothane-induced contractures of masseter muscle are similar to those of vastus muscle in normal humans. Acta Anaesthesiologica Scandinavica 1999; 43:764-69

41. Antognini JF, XW Wang, E Carstens. Quantitative and qualitative effects of isoflurane on movement occurring after noxious stimulation. Anesthesiology 1999; 91:1064-71

42. Antognini JF, E Carstens. Isoflurane blunts electroencephalographic and thalamic/reticular formation responses to noxious stimulation in goats. Anesthesiology 1999; 91:1770-9

43. Antognini JF, XW Wang, E Carstens. Isoflurane action in the spinal cord blunts electroencephalographic and thalamic-reticular formation responses to noxious stimulation in goats. Anesthesiology 2000; 92:559-66

44. Antognini JF, XW Wang, M Piercy, E Carstens. Propofol directly depresses lumbar dorsal horn neuronal responses to noxious stimulation. Canadian Journal of Anesthesia 2000; 47:273-79

45. Antognini JF, Saadi J, Wang XW, Carstens E, Piercy M. Propofol action in both spinal cord and brain blunts electroencephalographic responses to noxious stimulation in goats. Sleep 2000; 24:26-31

46. Antognini JF, XW Wang, E Carstens. Isoflurane anaesthetic depth in goats monitored using the bispectral index of the electroencephalogram. Veterinary Research Communications 2000; 24:361-370

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49. Antognini JF, Chen XG, Sudo M, Sudo S, Carstens E. Variable effects of nitrous oxide at multiple levels of the central nervous system in goats. Veterinary Research Communications 2001; 25:523-538

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51. Antognini JF, Carstens E, Atherley R. Does the immobilizing effect of thiopental in brain exceed that of halothane? Anesthesiology 2002; 96:980-6

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62. Jinks SL, Antognini JF, Carstens E. Spectral analysis of movement patterns during anesthesia.Anesth Analg. 2004; 98:698-702.

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67. Cuellar JC, Antognini JF, Carstens E. An in vivo method for recording single unit activity in lumbar spinal cord in mice anesthetized with a volatile anesthetic. Brain Res Prot 2004; 13:126-34

68. Cuellar JC, Antognini JF, Eger EI, Carstens E. Halothane depresses C-fiber-evoked windup of deep dorsal horn neurons in mice. Neurosci Letters 2004; 363:207-11

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