| SEC | Form | 4 |
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### FORM 4

# UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

| Check this box if no longer subject to |
|--|
| Section 16. Form 4 or Form 5           |
| obligations may continue. See          |
| Instruction 1(b).                      |

## STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934

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|  |         |                  | or Section So(ii) of the investment Company Act of 1540                                 |  |                                   |                       |  |  |
|--|---------|------------------|---|--|-----------------------------------|-----------------------|--|--|
| 1. Name and Address of Reporting Person <sup>*</sup> <u>McHutchison John G</u> |         | Person*          | 2. Issuer Name <b>and</b> Ticker or Trading Symbol<br>ASSEMBLY BIOSCIENCES, INC. [ASMB] | 5. Relationship of Reporting Person(s) to Issuer<br>(Check all applicable) |                                   |                       |  |  |
|  |         |                  |   | X  | Director                          | 10% Owner             |  |  |
|  |         | (Middle)         | One of Earliest Transaction (Month/Day/Year)  | X  | Officer (give title below)        | Other (specify below) |  |  |
| C/O ASSEMBLY BIOSCIENCES, INC.   |         |                  | 09/28/2019  |  | CEO and President                 |                       |  |  |
| 11711 N. MERIDIAN STREET, SUITE 310  |         | T, SUITE 310     |   |  |                                   |                       |  |  |
|  |         |                  | 4. If Amendment, Date of Original Filed (Month/Day/Year)                                |  |                                   |                       |  |  |
| (Street)   |         |                  |   | Line)  |                                   |                       |  |  |
| CARMEL   | IN      | 46032            |   |  | Form filed by One Rep             | oorting Person        |  |  |
|  |         |                  |   |  | Form filed by More that<br>Person | n One Reporting       |  |  |
| (City)   | (State) | (Zip)            |   |  | F el soli                         |                       |  |  |
|  |         | Table I - Non-De | erivative Securities Acquired, Disposed of, or Benefic                                  | cially C   | Dwned                             |                       |  |  |

### Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

| 1. Title of Security (Instr. 3) | Date<br>(Month/Day/Year) | 2A. Deemed<br>Execution Date,<br>if any<br>(Month/Day/Year) | 3.<br>Transa<br>Code (<br>8) |   | 4. Securities Acquired (A) or<br>Disposed Of (D) (Instr. 3, 4 and 5) |               |       | Securities                         | 6. Ownership<br>Form: Direct<br>(D) or Indirect<br>(I) (Instr. 4) | 7. Nature of<br>Indirect<br>Beneficial<br>Ownership<br>(Instr. 4) |
|---------------------------------|--------------------------|---|------------------------------|---|--|---------------|-------|------------------------------------|---|---|
|                                 |                          |   | Code                         | v | Amount   | (A) or<br>(D) | Price | Transaction(s)<br>(Instr. 3 and 4) |   | (IIISU. 4)  |

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

| 1. Title of<br>Derivative<br>Security<br>(Instr. 3) | 2.<br>Conversion<br>or Exercise<br>Price of<br>Derivative<br>Security | 3. Transaction<br>Date<br>(Month/Day/Year) | 3A. Deemed<br>Execution Date,<br>if any<br>(Month/Day/Year) | 4.<br>Transa<br>Code (<br>8) |   | on of  |     | 6. Date Exercisable and<br>Expiration Date<br>(Month/Day/Year) |                    | 7. Title and Amount<br>of Securities<br>Underlying<br>Derivative Security<br>(Instr. 3 and 4) |  | 8. Price of<br>Derivative<br>Security<br>(Instr. 5) | 9. Number of<br>derivative<br>Securities<br>Beneficially<br>Owned<br>Following<br>Reported<br>Transaction(s)<br>(Instr. 4) | 10.<br>Ownership<br>Form:<br>Direct (D)<br>or Indirect<br>(I) (Instr. 4) | 11. Nature<br>of Indirect<br>Beneficial<br>Ownership<br>(Instr. 4) |
|---|---|--|---|------------------------------|---|--------|-----|--|--------------------|---|--|---|--|--|--|
|   |   |  |   | Code                         | v | (A)    | (D) | Date<br>Exercisable  | Expiration<br>Date | Title   | Amount<br>or<br>Number<br>of<br>Shares |   |  |  |  |
| Performance-<br>based<br>Restricted<br>Stock Units  | (1)   | 09/28/2019                                 |   | A                            |   | 25,000 |     | (1)  | 09/28/2022         | Common<br>Stock   | 25,000                                 | \$0.00  | 25,000   | D  |  |

### Explanation of Responses:

1. Each performance-based Restricted Stock Unit ("RSU") represents a contingent right to receive one share of Assembly Biosciences, Inc. common stock. The shares of common stock are earned if market-based performance metrics are met (the "Milestone") on or before the third anniversary of the grant date. If the Milestone is achieved on or before the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date. If the Milestone is achieved after the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date, then the RSUs shall become fully vested on the second anniversary of the grant date. If the Milestone is achieved after the second anniversary of the grant date and on or before the third anniversary of the grant date. become fully vested on the third anniversary of the grant date. Any RSU that has not been earned and vested as of the third anniversary of the grant will be forfeited. Remarks:

> /s/ John O. Gunderson, as Attorney-in-Fact

10/01/2019

\*\* Signature of Reporting Person Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

\* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).

\*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.