Delaware (State of Incorporation) As filed with the Securities and Exchange Commission on January 8, 2004

Registration No. 333-

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-8

REGISTRATION STATEMENT

UNDER THE SECURITIES ACT OF 1933

RIGEL PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

1180 Veterans Boulevard South San Francisco, California 94080 (650) 624-1100 (Address of principal executive offices)

> 2000 Equity Incentive Plan (Full title of the plan)

James M. Gower Chairman of the Board and Chief Executive Officer **Rigel Pharmaceuticals, Inc. 1180 Veterans Boulevard** South San Francisco, California 94080 (650) 624-1100

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copy to:

Suzanne Sawochka Hooper, Esq. Cooley Godward LLP **Five Palo Alto Square 3000 El Camino Real** Palo Alto, CA 94306 (650) 843-5000

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee
Common Stock (par value \$.001)	296,022 shares	\$19.15	\$5,668,821	\$459

(1) Pursuant to Rule 416(a) promulgated under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement shall cover any additional shares of common stock which become issuable under the plan covered hereby by reason of any stock dividend, stock split, recapitalization or any other similar transaction without receipt of consideration which results in an increase in the number of shares of Registrant's outstanding common stock.

(2)Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(h) under the Securities Act. The offering price per share and aggregate offering price for the common stock are based upon the average of the high and low prices of Registrant's common stock as reported on the Nasdaq National Market System on January 2, 2004.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The contents of Registration Statement on Form S-8 (No. 333-106532), filed with the Securities and Exchange Commission on June 26, 2003, are incorporated by reference herein.

LEGAL MATTERS

94-3248524 (I.R.S. Employer Identification No.)

8731 (Primary Standard Industrial Classification Code Number) The validity of the securities being offered hereby will be passed upon by Cooley Godward LLP, Palo Alto, California. As of the date of this prospectus, certain partners and associates of Cooley Godward LLP own an aggregate of approximately 17,400 shares of our common stock, either individually or through investment partnerships.

EXPERTS

The financial statements of Rigel Pharmaceuticals, Inc. appearing in Rigel Pharmaceuticals, Inc.'s Annual Report (Form 10-K), as amended, for the year ended December 31, 2002, have been audited by Ernst & Young LLP, independent auditors, as set forth in their report thereon included therein and incorporated herein by reference. Such financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

With respect to the unaudited condensed consolidated interim financial information for the three-month periods ended March 31, 2003 and March 31, 2002, the three and six-month periods ended June 30, 2003 and June 30, 2002 and the three and nine-month periods ended September 30, 2003 and September 30, 2002 incorporated by reference in this registration statement, Ernst & Young LLP has reported that it has applied limited procedures in accordance with professional standards for a review of such information. However, its separate reports, included in Rigel Pharmaceuticals, Inc.'s Quarterly Reports on Form 10-Q for the quarters ended March 31, 2003, June 30, 2003 and September 30, 2003, and incorporated herein by reference, state that it did not audit and it does not express an opinion on that interim financial information. Accordingly, the degree of reliance on its reports on such information should be restricted considering the limited nature of the review procedures applied. The independent auditors are not subject to the liability provisions of Section 11 of the Securities Act for its reports on the unaudited interim financial information because those reports are not "reports" or a "part" of the Registration Statement prepared or certified by the auditors within the meaning of Sections 7 and 11 of the Securities Act.

EXHIBITS

Exhibit Number	
4.1(1)	Amended and Restated Certificate of Incorporation of the Company.
4.2(2)	Amended and Restated Bylaws of the Company.
4.3(1)	Specimen Common Stock Certificate.
5.1	Opinion of Cooley Godward LLP.
15.1	Letter regarding unaudited interim financial information.
23.1	Consent of Ernst & Young LLP, Independent Auditors.
23.2	Consent of Cooley Godward LLP. Reference is made to Exhibit 5.1.
24.1	Power of Attorney is contained on the signature pages to this Registration Statement.
99.1(3)	2000 Equity Incentive Plan, as amended and restated.

- (1) Documents incorporated by reference to the Company's Current Report on Form 8-K, filed with the Securities and Exchange Commission on June 24, 2003.
- (2) Document incorporated by reference to the Company's Registration Statement on Form S-1, as amended (No. 333-45864), originally filed with the Securities and Exchange Commission on September 15, 2000.
- (3) Document incorporated by reference to the Company's Registration Statement on Form S-8 (No. 333-106532), filed with the Securities and Exchange Commission on June 26, 2003.

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SIGNATURES

Pursuant to the requirements of the Securities Act, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of South San Francisco, State of California, on January 8, 2004.

RIGEL PHARMACEUTICALS, INC.

By: /s/ JAMES M. GOWER

James M. Gower Chairman of the Board and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints James M. Gower and James H. Welch, and each of them, as true and lawful attorneys-in-fact and agents, with full powers of substitution and resubstitution, for them and in their name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission (the "SEC"), and generally to do all such things in their names and behalf in their capacities as officers and directors to enable Rigel to comply with the provisions of the Securities Act and all requirements of the SEC, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act, this registration statement has been signed below by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ JAMES M. GOWER	Chairman of the Board and Chief Executive Officer (Principal Executive Officer)	January 8, 2004
James M. Gower		
/s/ JAMES H. WELCH	Vice President, Chief Financial Officer and Secretary (Principal Financial and Accounting Officer)	January 8, 2004
James H. Welch	(
/s/ DONALD G. PAYAN	Executive Vice President, Chief Scientific Officer and Director	January 8, 2004
Donald G. Payan		
/s/ JEAN DELEAGE	Director	January 8, 2004
Jean Deleage		
/s/ ALAN D. FRAZIER	Director	January 8, 2004
Alan D. Frazier		
/s/ DENNIS J. HENNER	Director	January 8, 2004
Dennis J. Henner		
/s/ WALTER H. MOOS	Director	January 8, 2004
Walter H. Moos		
/s/ STEPHEN A. SHERWIN	Director	January 8, 2004
Stephen A. Sherwin		
/s/ NICHOLAS J. SIMON, III	Director	January 8, 2004
Nicholas J. Simon, III		
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	EXHIBITS	
Exhibit		

Opinion of Cooley Godward LLP. 15.1 Letter regarding unaudited interim financial information. 23.1 Consent of Ernst & Young LLP, Independent Auditors. 23.2 Consent of Cooley Godward LLP. Reference is made to Exhibit 5.1. 24.1 Power of Attorney is contained on the signature pages to this Registration Statement. 99.1(3) 2000 Equity Incentive Plan, as amended and restated.

4.2(2)

4.3(1)

5.1

Amended and Restated Bylaws of the Company.

Specimen Common Stock Certificate.

(1) Documents incorporated by reference to the Company's Current Report on Form 8-K, filed with the Securities and Exchange Commission on June 24, 2003.

(2) Document incorporated by reference to the Company's Registration Statement on Form S-1, as amended (No. 333-45864), originally filed with the Securities and Exchange Commission on September 15, 2000.

(3) Document incorporated by reference to the Company's Registration Statement on Form S-8 (No. 333-106532), filed with the Securities and Exchange Commission on QuickLinks

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE EXHIBITS SIGNATURES POWER OF ATTORNEY EXHIBITS

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Exhibit 5.1

[Cooley Godward LLP Letterhead]

January 8, 2004

Rigel Pharmaceuticals, Inc. 1180 Veterans Boulevard South San Francisco, CA 94080

Ladies and Gentlemen:

You have requested our opinion with respect to certain matters in connection with the filing by Rigel Pharmaceuticals, Inc. (the "Company") of a Registration Statement on Form S-8 (the "Registration Statement") with the Securities and Exchange Commission covering the offering of up to an aggregate 296,022 shares of the Company's Common Stock, \$.001 par value (the "Shares"), with respect to the Company's 2000 Equity Incentive Plan (the "Plan").

In connection with this opinion, we have examined the Registration Statement and related Prospectus, the Company's Amended and Restated Certificate of Incorporation and Bylaws and such other documents, records, certificates, memoranda and other instruments as we deem necessary as a basis for this opinion. We have assumed the genuineness and authenticity of all documents submitted to us as originals, the conformity to originals of all documents submitted to us as copies thereof and the due execution and delivery of all documents where due execution and delivery are a prerequisite to the effectiveness thereof.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued in accordance with the Plan, the Registration Statement and the related Prospectus, will be validly issued, fully paid, and nonassessable.

We consent to the filing of this opinion as an exhibit to the Registration Statement.

Very truly yours,

COOLEY GODWARD LLP

By:

/s/ SUZANNE SAWOCHKA HOOPER

Suzanne Sawochka Hooper

QuickLinks

Exhibit 5.1

January 6, 2004

The Board of Directors and Stockholders of Rigel Pharmaceuticals, Inc.

We are aware of the incorporation by reference in the Registration Statement (Form S-8) of Rigel Pharmaceuticals, Inc. pertaining to the 2000 Equity Incentive Plan of Rigel Pharmaceuticals, Inc. of our reports dated April 21, 2003, August 13, 2003 and November 13, 2003 relating to the unaudited condensed interim financial statements of Rigel Pharmaceuticals, Inc. that are included in its Forms 10-Q for the quarters ended March 31, 2003, June 30, 2003 and September 30, 2003, respectively.

Very truly yours,

/s/ ERNST & YOUNG LLP

Palo Alto, California January 6, 2004

QuickLinks

Exhibit 15.1

CONSENT OF ERNST & YOUNG LLP, INDEPENDENT AUDITORS

We consent to the reference of our firm under the caption "Experts" in the Registration Statement (Form S-8) pertaining to the 2000 Equity Incentive Plan of Rigel Pharmaceuticals, Inc. and to the incorporation by reference therein of our report dated January 24, 2003, except for Note 9 as to which the date is January 31, 2003, with respect to the financial statements of Rigel Pharmaceuticals, Inc. included in its Annual Report on Form 10-K, as amended, for the year ended December 31, 2002, filed with the Securities and Exchange Commission.

/s/ ERNST & YOUNG LLP

Palo Alto, California January 6, 2004

QuickLinks

Exhibit 23.1

CONSENT OF ERNST & YOUNG LLP, INDEPENDENT AUDITORS