

FORM 11-K
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON D.C. 20549

ANNUAL REPORT

PURSUANT TO SECTION 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934

(X) Annual report pursuant to Section 15(d) of the Securities
Exchange Act of 1934

For the fiscal year ended December 31, 2003

OR

() Transition report pursuant to Section 15(d) of the
Securities Exchange Act of 1934

For the transition period from _____ to _____

Commission file number 000-16109

A. Full title of the plan and the address of the plan, if
different from that of the issuer named below:

AP PHARMA 401(k) PLAN
123 SAGINAW DRIVE
REDWOOD CITY, CA 94063

B. Name of issuer of the securities held pursuant to the plan
and the address of its principal executive office:

A.P. PHARMA, INC.
123 SAGINAW DRIVE
REDWOOD CITY, CA 94063
TELEPHONE (650) 366-2626

SIGNATURE

The Plan. Pursuant to the requirements of the Securities
Exchange Act of 1934, the administrator has duly caused this
annual report to be signed on its behalf by the undersigned
hereunto duly authorized.

AP PHARMA 401(k) PLAN

Date: June 17, 2004

By /s/Gordon Sangster

Gordon Sangster
Chief Financial Officer

AP Pharma 401(k) Plan
Financial Statements
December 31, 2003 and 2002

AP PHARMA 401(k) PLAN

Financial Statements and Supplemental Schedule
December 31, 2003 and 2002

Table of Contents

Independent Accountants' Report

Financial Statements:

Statements of Net Assets Available for Benefits
Statements of Changes in Net Assets Available for Benefits
Notes to Financial Statements

Supplemental Schedule as of December 31, 2003

Consent of Independent Accountants

INDEPENDENT ACCOUNTANTS' REPORT

To the Participants and
Plan Administrator of the
AP Pharma 401(k) Plan

We have audited the financial statements of the AP Pharma 401(k) Plan (the Plan) as of December 31, 2003 and 2002, and for the years then ended, as listed in the accompanying table of contents. These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Plan's management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the net assets available for benefits of the Plan as of December 31, 2003 and 2002, and the changes in net assets available for benefits for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

Our audits were performed for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental schedule, as listed in the accompanying table of contents, is presented for the purpose of additional analysis and is not a required part of the basic financial statements but is supplementary information required by the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974. The supplemental schedule is the responsibility of the Plan's management. The supplemental schedule has been subjected to the auditing procedures applied in the audits of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

By /s/ MOHLER, NIXON & WILLIAMS

MOHLER, NIXON & WILLIAMS
Accountancy Corporation

Campbell, California
April 28, 2004

AP PHARMA 401(k) PLAN

STATEMENT OF NET ASSETS AVAILABLE FOR BENEFITS

	DECEMBER 31,	
	2003	2002
	----	----
ASSETS:		
Investments, at fair value	\$2,457,446	\$1,912,670
Participant loans	9,209	15,938

	-----	-----
Assets held for investment purposes	2,466,655	1,928,608
Employer's contribution receivable	23,494	17,755
Participants' contribution receivable	--	5,024
	-----	-----
Net assets available for benefits	\$2,490,149	\$1,951,387
	=====	=====

See notes to financial statements.

AP PHARMA 401(k) PLAN

STATEMENTS OF CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS

	YEARS ENDED DECEMBER 31,	
	2003	2002
	-----	-----
Additions to net assets attributed to:		
Investment income (loss):		
Dividends and interest	\$ 1,086	\$ 1,838
Net realized and unrealized appreciation (depreciation) in fair value of investments	515,699	(453,581)
	-----	-----
	516,785	(451,743)
	-----	-----
Contributions:		
Participants'	187,585	243,957
Employer's	72,902	80,441
	-----	-----
	260,487	324,398
	-----	-----
Total additions	777,272	(127,345)
	-----	-----
Deductions from net assets attributed to:		
Withdrawals and distributions	238,510	261,143
	-----	-----
Total deductions	238,510	261,143
	-----	-----
Net increase (decrease) in net assets	538,762	(388,488)
Net assets available for benefits:		
Beginning of year	1,951,387	2,339,875
End of year	\$2,490,149	\$1,951,387
	=====	=====

See notes to financial statements.

AP PHARMA 401(k) PLAN

NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2003 AND 2002

NOTE 1 - THE PLAN AND ITS SIGNIFICANT ACCOUNTING POLICIES

General - The following description of the AP Pharma 401(k) Plan (the Plan) provides only general information. Participants should refer to the Plan document for a more complete description of the Plan's provisions.

The Plan is a defined contribution plan that was established in 1986 by Advanced Polymer Systems, Inc. to provide benefits to eligible employees of the Company and its affiliates, as defined in the Plan document. Formerly known as the Advanced Polymer Systems, Inc. Salary Reduction Profit Sharing Plan, the Plan was amended in May 2001 to change the Plan name in conjunction with the change in the name of the employer and Plan sponsor from Advanced Polymer Systems, Inc. to A.P. Pharma, Inc. (the Company).

The Plan was amended and restated effective January 1, 2002. The Plan is currently designed to be qualified under the applicable requirements of the Internal Revenue Code (the Code), as amended, and the provisions of the Employee Retirement Income Security Act

of 1974 (ERISA), as amended.

Administration - The Company has appointed an Administrative Committee (the Committee) to manage the operation and administration of the Plan. The Company has contracted with a third-party administrator, CMG Consulting, Inc. (CMG), through May 31, 2003 and Bisys Retirement Services (BISYS) effective June 1, 2003, to process and maintain the records of participant data. Substantially all expenses incurred for administering the Plan are paid by the Company. Eastern Bank was the third-party trustee of the Plan through May 2002. Sterling Trust Company served as trustee from May through July 2002, and Matrix Capital Bank (Matrix) succeeded Sterling as trustee in August 2002.

Estimates - The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and changes therein, and disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Basis of accounting - The financial statements of the Plan are prepared on the accrual method of accounting in accordance with accounting principles generally accepted in the United States of America.

Forfeited accounts - Forfeitures of terminated participants' employer profit sharing contribution accounts, if any, are allocated among participants based on eligible employee compensation.

Investments - Investment options include various mutual funds offered through Matrix and a fund invested in shares of A.P. Pharma, Inc. common stock (Company Stock Fund). The Plan's investments in mutual funds and the Company Stock Fund are valued at fair value as of the last day of the Plan year, as measured by quoted market prices. Participant loans are valued at cost, which approximates fair value.

Effective January 1, 2000, the Company Stock Fund was frozen by the Committee. As a result, participants are permitted to transfer their investments from the Company Stock Fund, but no new contributions or transfers into the fund are permitted.

Income taxes - The Plan has adopted a prototype plan that has received an opinion letter from the Internal Revenue Service. The Company believes that the Plan is operated in accordance with, and qualifies under, the applicable requirements of the Code and related state statutes, and that the trust, which forms a part of the Plan, is exempt from federal income and state franchise taxes.

Risks and uncertainties - The Plan provides for various investment options in any combination of investment securities offered by the Plan. In addition, Company common stock is included in the Plan. Investment securities are exposed to various risks, such as interest rate, market fluctuations and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in market values, interest rates or other factors in the near term would materially affect participants' account balances and the amounts reported in the statements of net assets available for benefits and the statements of changes in net assets available for benefits.

NOTE 2 - PARTICIPATION AND BENEFITS

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Participant contributions - Participants may elect to have the Company contribute their eligible pre-tax compensation to the plan up to the amount allowable under current income tax regulations. Participants who elect to have the Company contribute a portion of their compensation to the Plan agree to accept an equivalent reduction in taxable compensation. Contributions withheld are invested in accordance with the participant's direction.

Participants are also allowed to make rollover contributions of amounts received from other tax-qualified employer-sponsored retirement plans. Such contributions are deposited in the

appropriate investment funds in accordance with the participant's direction and the Plan's provisions.

Employer contributions - The Company is allowed to make matching contributions as defined in the Plan and as approved by the Board of Directors. The Company matched 50% of each eligible participant's contribution up to a maximum amount equal to the lesser of 3% of each participant's annual compensation or \$6,000 and \$5,500 in 2003 and 2002, respectively. The Plan also allows for a discretionary profit sharing contribution. No discretionary contribution has been made since inception of the Plan.

Vesting - Participants are immediately vested in their contributions and employer matching contribution. Participants are fully vested in the employer's profit sharing contributions allocated to their account after six years of credited service.

Participant accounts - Each participant's account is credited with the participant's contribution, Plan earnings or losses and an allocation of the Company's contribution. Allocation of the Company's contribution is based on participant contributions or eligible employee compensation, as defined in the Plan.

Payment of benefits - Upon termination, the participants or beneficiaries may elect to leave their account balance in the Plan, or receive their total benefits in a lump sum amount or installments equal to the value of the participant's vested interest in their account. The Plan allows for automatic lump sum distribution of participant vested account balances that do not exceed \$5,000. Distribution of accounts invested in the Company Stock Fund must be in a lump sum and may be made in cash or shares of stock.

Loans to participants - The Plan allows participants to borrow not less than \$1,000 and up to the lesser of \$50,000 or 50% of their vested account balance. The loans are secured by the participant's vested balance. Such loans bear interest at the available market financing rates and must be repaid to the Plan within a five-year period, unless the loan is used for the purchase of a principal residence in which case the maximum repayment period may be longer. The specific terms and conditions of such loans are established by the Committee. Outstanding loans at December 31, 2003 carry interest rates ranging from 9.75% to 10%.

NOTE 3 - INVESTMENTS

The following table presents the fair values of investments and investment funds that represent 5% or more of the Plan's net assets at December 31:

	2003	2002
	----	----
Federated Capital Preservation Fund	\$ 244,363	\$ 304,040
American Balanced Fund	258,510	187,357
Federated Max-Cap Fund	334,685	228,338
Fidelity Advisor Equity Growth Fund	374,878	287,043
Pimco Total Return Fund	112,637	135,380
Growth Fund of America	745,876	558,020
Fidelity Advisor Mid Cap Fund	209,022	132,968
Other Funds individually less than 5% of net assets	186,684	95,462
	-----	-----
Assets held for investment purposes	\$2,466,655	\$1,928,608
	=====	=====

The Plan's investments (including gains and losses on investments bought and sold, as well as held during the year) appreciated (depreciated) in value as follows for the years ended December 31:

	2003 ----	2002 ----
Common stock	\$ 17,730	\$ (23,382)
Mutual funds	497,969	(430,199)
	-----	-----
	\$ 515,699	\$(453,581)
	=====	=====

NOTE 4 - PARTY-IN-INTEREST TRANSACTIONS

As summarized in Note 1, prior to January 1, 2000, participants could elect to invest a portion of their accounts in the common stock of the Company. Aggregate investment in A.P. Pharma, Inc. common stock was as follows at December 31:

Date	Number of shares	Fair value
-----	-----	-----
2003	11,970	\$29,326
2002	12,990	12,990

NOTE 5 - PLAN TERMINATION

The Company intends to continue the Plan indefinitely for the benefit of its participants; however, it reserves the right to terminate or modify the Plan at any time by resolution of its Board of Directors and subject to the provisions of ERISA. In the event the Plan is terminated in the future, participants would become fully vested in their accounts.

SUPPLEMENTAL SCHEDULE

AP PHARMA 401(K) PLAN

EIN: 94-2875566

PLAN #001

Schedule H, Line 4i - Schedule of Assets (Held at End of Year)
December 31, 2003

Identity of issue, borrower, lessor or similar party	Description of investment including maturity date, rate of interest, collateral, par or maturity value	Current value
-----	-----	-----
Federated Capital Preservation Fund	Mutual Fund	\$ 244,363
American Balanced Fund	Mutual Fund	258,510
Federated Max-Cap Fund	Mutual Fund	334,685
Fidelity Advisor Equity Growth Fund	Mutual Fund	374,878
Templeton Foreign Fund	Mutual Fund	93,900
Pimco Total Return Fund	Mutual Fund	112,637
Washington Mutual	Mutual Fund	17,374
Growth Fund of America	Mutual Fund	745,876
Fidelity Advisor Mid Cap Fund	Mutual Fund	209,022
Oppenheimer Global Fund	Mutual Fund	36,849
* A.P. Pharma, Inc. Common Stock	Common Stock	29,326
* Participant loans	Interest rates ranging from 9.75% to 10%	9,209
Cash	Cash	26

	Total	\$2,466,655
		=====

* Party-in-interest

CONSENT OF INDEPENDENT ACCOUNTANTS

We consent to the incorporation by reference in the Registration Statement on Form S-8 (No. 33-29084) of A.P. Pharma, Inc. of our report dated April 28, 2004, relating to the financial statements and schedule of the AP Pharma 401(k) Plan included in this Annual Report on Form 11-K.

By /s/ Mohler, Nixon & Williams

MOHLER, NIXON & WILLIAMS
Accountancy Corporation

Campbell, California
June 17, 2004