Merck Ecosystem

Merck & Co.
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Outside Relationships

Regulators

U.S. Regulation

Intellectual Property
- U.S. Patent and Trademark Office (PTO) *(patent registrations, challenges, and enforcement; trademark registrations)*

Drugs
- U.S. Food and Drug Administration (FDA) *(new drug and medical device approval and regulation, including testing, approval, safety, effectiveness, manufacturing, labeling, distribution, and post-market surveillance)*
- Drug Enforcement Agency (DEA) *(wholesaler registrations, security and operating standards for sale, packaging, storage and distribution of controlled substances)*

Sales & Marketing
- Federal Trade Commission (FTC) *(advertising of consumer health products; anti-kickbacks and prevention of false claims, fraud, and abuse)*

Pricing & Reimbursement
- Centers for Medicare and Medicaid Services *(drug price reporting, discounted pricing or rebates on purchase of pharmaceutical products under the Medicaid Drug Rebate Program, "Federal Ceiling Price" Drug Pricing Program, and Medicare Part D Program)*

Other Regulation
- U.S. Environmental Protection Agency (EPA) *(regulation of, and permits regarding, discharges, leaks, emissions, disposals, storage of particulate matter, hazardous waste, and toxic substance in the water, air, and soil)*
- SEC *(record keeping requirements under anti-bribery law)*
- U.S. Foreign Corrupt Practices Act *(anti-bribery and corruption laws)*

Capital

- Public Debt Holders
- Commercial Banks
- Hedge Counterparties

Suppliers

Alliances and Collaboration Agreements
- Johnson & Johnson (COVID-19 Vaccine)
- Pfizer (Bavencio®)
- Eisai (Lenvima®)
- Gilead (HIV Treatments)

Suppliers
- Tianjin Tianyao Pharmaceutical (active pharmaceutical ingredients)
- PharmaTech (active pharmaceutical ingredients)
- Shanghai Pharmaceutical (steroid active pharmaceutical ingredients)
- DuPont (chemicals)
- U.S. Steel (steel)
- Cenova (plastic and packaging materials)
- O-I Glass (glass)
- Sonoco (packaging materials)
- Avery Dennison (packaging materials)
- Republic Services (hazardous waste disposal services)
- Waste Management, Inc. (waste disposal services)
- UPS (transportation and fleet management services)

Customers

Vaccine Products Customers

Wholesalers & Physician Distributors
- AndaMEDS
- Besse Medical (AmerisourceBergen)
- Henry Schein
- McKesson Medical-Surgical, Inc.
- VaxServe, Inc.

Direct
- U.S. Centers for Disease Control and Prevention (vaccines)
- CVS Health
- Walgreens
- Individual Physician Offices

Sales to End Consumers
- Individual Consumers

Relationships

- **Bond Financing**
- **Working Capital Financing**
- **Foreign Currency and Interest Rate Derivatives**
- **Joint Development, Promotion, and Commercialization Collaboration Agreements**
- **U.S. Pharmaceutical Products Regulation**
- **Active Pharmaceutical Ingredients, Metals, Plastics, Glass, Packing Materials, Transportation Services, and Other Supplies**
- **Vaccine Product Sales**

Merck & Co. (New Jersey Corporation)

Debt Structure

Debt ($31.79B @ 2/25/2021

$6B Revolving Credit Facility (Matures 2024), Includes Commercial Paper Borrowing Facility

Credit Ratings: Moody's (A1), S&P (AA-), Fitch (A+)

2.38% (avg) 2022 Senior Notes ($2.301 Billion)	1.70% (avg) 2024 Senior Notes ($1.357 Billion)	1.31% (avg) 2026 Senior Notes ($2.209 Billion)	6.40% 2028 Debentures ($250 Million)	3.71% (avg) 2030-2050 Senior Notes ($12.26 Billion)
2.80% 2023 Senior Notes ($1.748 Billion)	2.75% 2025 Senior Notes ($2.493 Billion)	6.30% 2026 Debentures ($135 Million)	3.40% 2029 Senior Notes ($1.734 Billion)	

Equity Structure

Equity

- *Share Repurchase Program* — Authorized: $10 Billion; 2020 Repurchases: $1.3 Billion (16M Shares); Remaining Authority: $5.9 Billion
- *Preferred Stock* — Authorized: 20 Million Shares; Issued: None
- *Common Stock* — Authorized: 6.5 Billion Shares; Issued: 3.577 Billion Shares; Record Holders: 104,900

Governance

Board of Directors

Kenneth Frazier, Chairman	Pamela Craig (A, G)	Patricia Russo (CB, G)	Peter Wendell (CB, R)
Leslie Brun (A, G)	Thomas Glocer (CB, G)	Christine Seldman (A, R)	Committees: Audit (A), Compensation and Benefits (CB), Governance (G), Research (R)
Thomas Cech (A, R)	Risa Lavizzo-Mourey (CB, G)	Inge Thulin (CB, G)	
Mary Ellen Coe (A, R)	Paul Rothman (A, R)	Kathy Warden (A, R)	

Management Team

Kenneth Frazier (CEO, Chairman)	Sanat Chattopadhyay (EVP, Merck Manufacturing Division)	Frank Clyburn (EVP, Chief Commercial Officer)	Robert Davis (EVP, CFO)
Dean Li (EVP, Merck Research Laboratories)	Richard DeLuca (EVP, Merck Animal Health)	Steven Mizell (EVP, Chief Human Resources Officer)	Dave Williams (Chief Information and Digital Officer)
Michael Fleming (Chief Ethics and Compliance Officer)	Michael Nally (EVP, Chief Marketing Officer)	Jennifer Zachary (EVP, General Counsel)	Julie Gerberding (EVP, Chief Patent Officer)

Corporate Matters

Finance and Accounting
- Analytics
- Audit
- Financial Reporting
- Financial Planning & Analysis
- Risk Management
- Tax
- Transfer Pricing

Legal
- Contract Management
- Global Affairs & Policy
- Global Health Care Compliance
- Intellectual Property
- Privacy
- Regulatory Affairs
- Securities Management
- Transparency Law

Research & Development
- Acquisitions
- Knowledge Management
- Licensing
- Medical Innovation
- Molecule Discovery Development
- Project Management
- Pipeline Programs
- Regulatory Activities
- Strategic Partnerships
- Vaccine Development

Marketing
- Competitive Analysis
- Digital Listening
- Global Commercial Forecasting
- Global Marketing
- New Product Planning
- Patient Analytics
- Strategic Brand Management

Supply Chain
- Compliance
- Contract Negotiation
- Packaging & Labeling
- Planning & Scheduling
- Portfolio Management
- Procurement

Human Resources
- Compensation & Benefits
- Diversity & Inclusion
- Talent Acquisition
- Training & Development

Information Technology
- API Development
- Research & Lab IT Architecture
- Digital Supply Chain
- Security
- Software Development

Operations

Pharmaceutical (2020 Sales: $43.02 Billion)

The Pharmaceutical segment includes human health pharmaceutical and vaccine products. Human health pharmaceutical products consist of therapeutic and preventive agents, generally sold by prescription, for the treatment of human disorders. Human health pharmaceutical products are sold to drug wholesalers and retailers, hospitals, government agencies, and managed health care providers. Human health vaccine products consist of preventive pediatric, adolescent, and adult vaccines. Human health vaccines are sold primarily to physicians, wholesalers, physician distributors and government entities.

Oncology (2020 Sales: $15.81 Billion)
- Keytruda® (treatment of cervical cancer, non-small-cell lung cancer, small-cell lung cancer, melanoma, large B-cell lymphoma, and other cancers)
- Lynparza® (treatment of certain types of ovarian, breast, pancreatic, and prostate cancers)
- Lenvima® (thyroid cancer treatment)
- Emend® (chemotherapy-induced nausea and vomiting preventative)

Vaccines (2020 Sales: $6.904 Billion)
- Gardasil®/Gardasil 9® (human papillomavirus infection vaccine)
- ProQuad® (measles, mumps, rubella, and varicella vaccine)
- M-M-R II® (measles, mumps, and rubella vaccine)
- Varivax® (chickenpox vaccine)
- Pneumovax 23® (pneumococcal vaccine)

Diabetes (2020 Sales: $5.276 Billion)
- Januvia®/Janumet® (drug to lower blood sugar levels in adults with type 2 diabetes)

Hospital Acute Care (2020 Sales: $2.090 Billion)
- Bridion® (injection to reverse two types of neuromuscular blocking agents used during surgery)
- Cubicin® (bacterial infection treatment)
- Noxafil® (antifungal agent for the prevention of certain invasive fungal infections)
- Zerbaxa® (antibacterial and beta-lactamase inhibitor for the treatment of certain bacterial infections)
- Prevymis® (cytomegalovirus (CMV) preventative)

Cardiovascular (2020 Sales: $1.748 Billion)
- Zetia®/Vytorin® (cholesterol medication)
- Atozet® (LDL cholesterol medication)
- Rosuzet® (cholesterol medication)
- Adempas® (pulmonary arterial hypertension treatment)

Immunology (2020 Sales: $1.168 Billion)
- Simponi® (once-monthly subcutaneous treatment for certain inflammatory diseases)
- Remicade® (inflammatory disease treatment)

Virology (2020 Sales: $1.024 Billion)
- Isentress®/Isentress HD® (HIV integrase inhibitor for use in combination with other antiretroviral agents for the treatment of HIV-1 infection)
- Zepatier® (Hepatitis C treatment)

Women's Health (2020 Sales: $916 Million)
- Implanon®/Nexplanon® (single-rod subdermal contraceptive implant)
- NuvaRing® (contraceptive product)

Biosimilars (2020 Sales: $330 Million)
- Renflexis® (biosimilar to Remicade®; treatment of certain inflammatory diseases)
- Ontruzant® (biosimilar to Herceptin®; treatment of HER2-positive breast cancer and HER2 gastric cancer)
- Aybintio® (treatment of certain types of cancer)
- Brenzys® (biosimilar to Enbrel®; treatment of certain inflammatory diseases)

Pharmaceutical Competitors

Pfizer	Novartis	Johnson & Johnson	GlaxoSmithKline (GSK)	Roche
Bristol-Myers Squibb	Sanofi	Eli Lilly	Amgen	Generic Brands

Animal Health (2020 Sales: $4.703 Billion)

The Animal Health segment discovers, develops, manufactures, and markets a wide range of veterinary pharmaceutical and vaccine products, as well as health management solutions and services, for the prevention, treatment, and control of disease in all major livestock and companion animal species. Merck also offers an extensive suite of digitally connected identification, traceability, and monitoring products.

Livestock Products (2020 Sales: $2.939 Billion)
- Nuflor® (antibiotic range for use in cattle and swine)
- Bonvilis®/Vista® (vaccine lines for infectious diseases in cattle)
- Banamine® (bovine and swine anti-inflammatory)
- Estrumate® (treatment of fertility disorders in cows)
- Matrix® (fertility management for swine)
- Resflor® (broad-spectrum antibiotic for bovine respiratory diseases)
- Zuprevo® (bovine respiratory disease treatment)
- Zilmax®/Revalor® (drug to improve production efficiencies in beef cattle)
- Safe-Guard® (de-wormer for cattle)
- M+Pac® (swine pneumonia vaccine)
- Porcilis®/Circumvent® (vaccine lines for infectious diseases in swine)
- Nobilis®/Innovax® (vaccine lines for poultry)
- Paracox®/Coccivac® (coccidiosis vaccines)
- Exzolt® (treatment for poultry red mite infestation)
- Slice® (parasiticides for sea lice in salmon)
- Aquavac®/Norvax® (vaccines against bacterial and viral diseases in fish)
- Aquaflor® (antibiotic for farm-raised fish)
- Allflex Livestock Intelligence® (animal identification, monitoring, and traceability)

Companion Animal Products (2020 Sales: $1.764 Billion)
- Bravecto® (oral and topical parasitic control)
- Sentinel® (oral parasitic products for dogs)
- Nobivac® (vaccine lines for flexible dog and cat vaccination)
- Otomax®/Mometamax/Posatex® (ear ointments for acute and chronic otitis)
- Panacur®/Safeguard® (broad-spectrum de-wormer)
- Regumate® (fertility management for horses)
- Optimmune® (ophthalmic ointment)
- Caninsulin®/Vetsulin® (diabetes mellitus treatment for cats and dogs)
- Scalibor®/Exspot® (protection against bites from fleas, ticks, mosquitoes, and sandflies)
- Prestige® (vaccine line for horses)
- Sure Petcare® (animal identifaction microchip)
- Home Again® (pet recovery system)

Animal Health Competitors

Boehringer Ingelheim	Zoetis	Elanco
Bayer AG	Ceva Sante Animale	Covetrus

- **Wholesale Sales of Pharmaceutical Products**
- **Direct Sales (including Discounts and Rebates) of Pharmaceutical Products to Medicare/Medicaid Service Providers and Regulators**
- **Foreign Pharmaceutical Products Regulation**

Pharmaceutical Products Customers

Wholesalers
- Amerisource Bergen
- Cardinal Health
- McKesson
- Other Wholesalers and Physician Distributors

Direct
- Retailers
- Hospitals
- Government Agencies (prescription drugs)
- Retail Pharmacy Chains
- Clinics
- Healthcare Professionals

Sales to End Consumers
- Individual Consumers

Animal Health Product Customers

Wholesalers
- Amerisource Bergen
- PBS Animal Health
- Patterson Veterinary
- Henry Schein
- D&H Wholesale Medical, Inc.

Direct
- Veterinarians
- Animal Breeders and Producers
- Farms
- Petco
- PetSmart
- Walmart
- Other Retailers

Sales to End Consumers
- Individual Consumers

- **Wholesale Animal Health Product Sales**
- **Direct Animal Health Product Sales**

Outside Relationships

Customers

- **Professional Services**

Suppliers

Professional Services Firms
- PWC (Audit Services)
- Starcom (Advertising and Branding Services)
- Williams & Jensen (Lobbying Services)
- Tarplin, Downs, & Young (Lobbying Services)
- Baker Botts LLP (Legal Services)
- Hughes Hubbard & Reed (Legal Services)
- Williams & Connolly LLP (Legal Services)

Capital

Significant Shareholders
- The Vanguard Group, Inc. (7.78%)
- BlackRock Fund Advisors (5.13%)
- SsgA Funds Management, Inc. (4.51%)
- Geode Capital Management LLC (1.66%)
- Wellington Management Co. LLP (1.61%)
- Institutional Ownership 75.37%

Regulators

Securities Regulators
- US Securities and Exchange Commission (SEC) *(securities regulation and required business and financial reporting)*
- New York Stock Exchange *(listing and maintenance rules for common stock and registered debt securities)*

Relationships

- **Securities Regulation and Stock Exchange Listing Rules**
- **Dividends and Common Stock Repurchases**
- **Equity Capital**
- **Professional Services**

Key Company Data (as of 02/25/2021)

Share Data
- Stock Exchange: New York Stock Exchange
- Ticker Symbol: MRK
- Share Price: $77.39 (as of 03/28/2021)
- Earnings Per Share: $2.78 (trailing 12 months)
- Forward Annual Dividend: $2.60
- Market Capitalization: $195.821B (as of 03/28/2021)

Financial Highlights

Results of Operations
- Revenues: $47.99B
- Cost of Sales: $15.49B
- R&D Expense: $13.56B
- Operating Income: $39.20B
- Net Income: $7.08B

Financial Condition
- Total Assets: $91.59B
- Total Liabilities: $66.19B
- Long-Term Debt: $25.36B
- Equity: $25.40B

Cash Flow
- From Operations: $10.25B
- From Investing: ($9.44B)
- From Financing: ($2.83B)
- Total Net Cash: ($1.77B)

Resources
- Employees: 74,000
- Global Headquarters: Kenilworth, NJ
- 8 Major Research Facilities
- Countries Where Products Sold: 66
- Projects in Clinical Trail and Development: 65

Recent Developments

COIVD-19 Vaccine: On March 2nd, 2021, Merck announced that it has entered into agreements with Johnson & Johnson, to support the manufacturing and supply of the SARS-CoV-2/COVID-19 vaccine. Merck will use its facilities in the United States to produce drug substance, formulate and fill vials of Johnson & Johnson's vaccine.

Organon Spin-Off: In 2020, Merck announced its intention to spin-off products from its women's health, biosimilars, and established brands businesses into a new, independent, publicly traded company named Organon &Co. The spin-off is expected to be completed late in the second quarter of 2021.

Leadership Change: Kenneth Frazier, chairman and chief executive officer, will retire as CEO, effective June 30th, 2021. The Merck board of directors has unanimously elected Robert M. Davis, Merck's current executive vice president, global services, and chief financial officer, as CEO.

Foreign Regulators

- **Drug and Product Safety** — European Union and Japan *(product safety regulation, including post-approval safety and efficacy studies, adverse drug reaction reporting and monitoring)*
- **New Drug Approvals** — European Medicines Agency (EMA) *(new drug and medical device approval; evaluates applications for marketing authorization)*; Pharmaceuticals and Medical Device Agency of Japan (PDMA) *(regulates clinical studies, drug approvals, post-marketing reviews, and pharmaceutical safety)*
- **Pricing & Reimbursement** — National Medical Products Administration of China (NMPA) *(approvals of domestic and imported new and generic drugs, clinical trail authorization, recording of bioequivalence studies of generics, and approval for innovative drugs in emergencies)*
- **Transparency** — All Nations *(pharmaceutical prices and reimbursement regulation)*
- **Privacy Protection** — All Nations *(disclosures of transfer of value by drug manufacturers to healthcare providers and consumers)*; EU General Data Protection Regulation (GDPR) *(restrictions on the ability to collect, analyze, and transfer personal data, including health data from clinical trails and adverse event reporting)*

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