

# APPENDIX 1:

## Sources for More Information

- American Academy of Dermatology  
*1567 Maple Ave  
Evanston IL 60201  
312-869-3954  
www.aad.com  
(Information on dermatology, including hair loss.)*
- American Academy of Cosmetic Surgery  
*159 East Live Oak Ave #204  
Arcadia CA 91006  
818-447-1579  
www.cosmeticsurgery.org  
(Information on various hair restoration procedures.)*
- American Society for Dermatologic Surgery  
*5550 Meadowbrook Dr. Suite 120  
Rolling Meadows, IL 60008  
847-956-0900  
www.asds-net.org  
(A good source for dermatologic and hair restoration surgeons)*
- American Hair Loss Council  
*100 Independence Place #207  
800-274-8717  
www.ahlc.org  
(Good source for hairpiece and wig information.)*
- International Society of Hair Restoration Surgery  
*www.ishrs.com  
(Source for hair restoration surgeons worldwide)*
- National Alopecia Areata Foundation  
*PO Box 5027  
Mill Valley CA 94911  
415-383-3444  
www.naaf.org  
(Best source for alopecia areata information)*

- [www.hairdoc.com](http://www.hairdoc.com)  
2001 Union Street #520  
San Francisco, Ca. 94123  
415-922-3344  
*(A good source for unbiased up-to-date information on hair loss)*
- International Alliance of Hair Restoration Surgeons  
[www.iabrs.org](http://www.iabrs.org)  
*(Good source to find hair restoration surgeons.)*  
[www.regrowth.com](http://www.regrowth.com)  
*(Information on medical treatments for hair loss.)*  
[www.thebaldtruth.com](http://www.thebaldtruth.com)  
*(Good source for all types of hair loss treatments.)*
- [www.quackwatch.com](http://www.quackwatch.com)  
*(Reveals all types of medical scams, including bogus hair loss treatments.)*

# APPENDIX 2

## Drugs That Can Cause Hair Loss

The following sources were used to create this list of drugs that can cause hair loss, however the list is still far from comprehensive.

1. *Drug Eruption Reference Manual, Eleventh Edition*, Litt, Jerome Z. Taylor and Francis
2. *Dermatology Moschella and Hurley*, Moschella, Samuel L., Hurley, Harry J. (eds) WB Saunders Company, Philadelphia 1985
3. *Disorders of Hair Growth*, Olsen, Elise A. (ed) McGraw Hill Inc. New York 1994
4. *Clinical Dermatology*, 2nd Edition, Habif, Thomas P. CV Mosby Company, St. Louis 1990
5. *Diseases of the Hair and Scalp*, Rook A, Dawber RPR (eds) Blackwell Scientific Publications, Oxford 1991
6. *Hair Loss: Principles of Diagnosis and Management of Alopecia*, Shapiro, Jerry, Martin Dunitz, London 2002

Most of the listed drugs have multiple names, including generic names and often many brand names. Brand names for medications can vary from country to country. Every name for every drug is not included in the list.

It is important to note that the incidence of hair loss occurring from the vast majority of these drugs is infrequent, often only one to two percent of users, and when it does occur is usually happens only after prolonged use of the medication. Many common medications are listed as possibly causing hair loss. They do not usually cause hair loss in most people, but have been documented to cause hair loss in some people.

Some drugs that are prescribed to help grow hair or slow hair loss, such as minoxidil, spironolactone, and oral contraceptives, are also included in this list of drugs that cause hair loss. This is not a mistake, but rather illustrates the complex ways that bodies respond

## Appendix 2

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to medications. And sometimes these drugs initially trigger hair shedding which is followed by increased hair growth.

If you are taking any of the listed medications and suspect that one or more may be causing your hair loss, discuss your concern with your physician. You may also wish to do some additional research on the drug or drugs you are concerned about. Your physician may determine that it is possible to switch to an alternative medication. In most cases, hair growth resumes after the medication that caused the hair loss is discontinued.

The numbers in parenthesis after each listed drug indicates the source or sources listing that drug as a possible cause of hair loss. Some of these reference guides in turn list studies published in medical journals describing the occurrence and frequency of side effects such as hair loss.

One class of medications cause hair loss in nearly 100 percent of patients within a week or two after taking the drugs. These

A new feature of this edition of this book is the listing of brand names. The generic names are in the left column and the most common brand name on the right column.

### Generic name

### Brand name

## A

Acebutolol (1) .....	Sectral
Acetaminophen (1).....	Tylenol
Acetohexamide (1).....	Dymelor
Acitretin (1) (5) (6).....	Soriatane
Acyclovir (1).....	Zovirax
Actinomycin-D (1) (5) .....	Cosmegen
Albendazole (1) (3).....	Albenza
Aldesleukin (1).....	Proleukin
Alfa Interferons (1) .....	
Alitretinoin (1).....	Panretin
Allopurinol (1) (2) (3) (4) (5) .....	Zyloprim
Altretamine (1) .....	Hexalen
Amantadine (1).....	Symmetrel
Amiloride (1).....	Midamor
Aminophylline (1)	
Aminosalicylate sodium (1) .....	Paser Granules
Amiodarone (1) (5).....	Pacerone

Amitriptyline (1).....	Elavil
Amlodipine (1).....	Norvasc
Amphotericin B (1).....	Amphocin
Anagrelide (1).....	Agrylin
Anastrozole (1).....	Arimidex
Androstenedione (1).....	Androstene
Anisindione (1).....	Miradon
Anthrax Vaccine (1).....	Anthrax Vaccine Adsorbed (AVA)
Aprepitant (1).....	Emend
Aripiprazole (1).....	Abilify
Arsenic (1).....	Trisonex
<b>Asparaginase (1) (6).....</b>	<b>Elspar</b>
Aspirin (1).....	
Atazanavir (1).....	Reyataz
Atenolol (1).....	Tenoretic
Atorvastatin (1).....	Lipitor
Azathioprine (1) (5).....	Imuran

**B**

Balsalazide (1).....	Colazal
Bendroflumethiazide (1).....	Corzide
Benzphetamine (1).....	Didrex
Betaxolol (1) (3).....	Kerlone
Bevacizumab (1).....	Avastin
Bexarotene (1).....	Targretin
Bicalutamide (1).....	Casodex
Bismuth (1).....	Pepto-Bismol
Bisoprolol (1).....	Zebeta
<b>Bleomycin (1) (3) (6).....</b>	<b>Blenoxane</b>
Brinzolamide (1).....	Azopt
Bromocriptine (1) (3) (5).....	Parlodel
Bupropion (1).....	Wellbutrin
Buspirone (1).....	Buspar
<b>Busulfan (1) (6).....</b>	<b>Myleran</b>

**C**

Cabergoline (1).....	Dostinex
Capecitabine (1).....	Xeloda
Captopril (1) (3).....	Captopen
Carbamazepine (1) (5).....	Tegretol
Carbidopa (1).....	Sinemet
Carbimazole (3) (5).....	

<b>Carboplatin (6)</b> .....	<b>Paraplatin</b>
<b>Carmustine (1) (6)</b> .....	<b>Gliadel Wafer</b>
Carteolol (1) .....	Cartrol
Carvedilol (1) .....	Coreg
Celecoxib (1) .....	Celebrex
Cerivastatin(1)	
Cetirizine (1) .....	Zyrtec
Cetuximab (1) .....	Erbitux
Cevimeline (1) .....	Exovac
<b>Chlorambucil (1) (6)</b> .....	<b>Leukeran</b>
Chloramphenicol (1) (5) .....	Chloromycetin
Chlordiazepoxide (1) .....	Limbitrol
Chloroquine (1) (5) .....	Aralen
Chlorothiazide (1) .....	Aldochlor
Chlorotrianisene (1) .....	Tace
Chlorpropamide (1) .....	Diabinese
Chlorthalidone (1) .....	Tenoretic
Chondroitin (1) .....	Chondroitin Sulfate C
Cidofovir (1) (6) .....	Forvade
Cimetidine (1) (3) (5) .....	Tagamet
<b>Cisplatin (1) (6)</b> .....	<b>Platinol</b>
Citalopram (1) .....	Celexa
Clofibrate (1) (3) .....	Claripex
Clomiphene (1) .....	Clomid
Clomipramine (1) .....	Anafranil
Clonazepam (1) .....	Klonopin
Clonidine (1) .....	Catapres
Colcemid (3)	
<b>Colchicine (1) (2) (3) (4) (5) (6)</b> .....	<b>Colbenemid</b>
Corticosteroids (1)	
Coumarin (3) (5)	
Cyclobenzaprine (1)	
<b>Cyclophosphamide (1) (2) (3) (5) (6)</b> .....	<b>Cytoxan</b>
Cyclosporine (1) .....	Neoral
<b>Cytarabine (1) (3) (6)</b> .....	<b>Cytosar-U</b>

## D

<b>Dacarbazine (1) (3) (6)</b> .....	<b>DTIC-Dome</b>
Dactinomycin (1) (3) (6) .....	Cosmegen
<b>Dalteparin (1) (3) (6)</b> .....	<b>Fragmin</b>
Danazol (1) (3) (6) .....	Danocrine

<b>Daunorubicin (1) (3) (6)</b> .....	<b>Cerubidine</b>
Delavirdine (1).....	Rescriptor
Desipramine (1) (3).....	Norpramin
Dexfenfluramine (1)	
Dextran (3)	
Diazoxide (1).....	Hyperstat
Dichloromethotrexate (3)	
Diclofenac (1).....	Voltaren
Dicumarol (1).....	Dicumarol
Didanosine (1).....	Videx
Dideoxycytidine (1).....	Hivid
Diethylpropion (1).....	Tenuate
Diethylstilbestrol (1)	
Diflunisal (1).....	Dolobid
Diltiazem (1).....	Teczem
Digoxin (1).....	Lanoxicaps
Disopyramide (1).....	Norpace
Dixyrazine (3)	
Disopyramide (1)	
<b>Docetaxel (1) (6)</b> .....	<b>Taxotere</b>
Donepezil (1).....	Aricept
Dopamine (1).....	Dopastat
Doxazosin (1).....	Cardura
Doxepin (1).....	Sinequan; Zonalon (Topical)
<b>Doxorubicin (1) (3) (5) (6)</b> .....	<b>Doxil</b>
Duloxetine (1).....	Cymbalta

**E**

Efavirenz (1).....	Sustiva
Elfornithine (1).....	Vania
Eletriptan (1).....	Relpax
Enalapril (1) (3).....	Vasotec
Endoxan (3)	
Epinephrine (1).....	Adrenalin
Epirubicin (1).....	Ellence
Epoetin Alfa (1).....	Procrit
Escitalopram (1).....	Lexapro
Esmolol (1).....	Brevibloc
Estramustine (1).....	Emcyt
Estrogens (1)	
Ethambutol (1).....	Myambutol
Ethionamide (1).....	Trecator SC

Ethosuximide (1) .....	Zarontin
Etidronate (1).....	Didronel
Etodolac (1).....	Lodine
Etretinate (5)	
Exemestane (1) .....	Aromasin

### F

Famotidine (1).....	Pepcid
Felbamate (1) .....	Felbatol
Fenofibrate (1) .....	Tricor
Fenopropfen (1).....	Nalfon
Finasteride (1) .....	Propecia
Flecainide (1) .....	Tambocor
Floxuridine (3) .....	FUDR
Fluconazole (1).....	Diflucan
Fludarabine (1) (3).....	Fludara

### **Fluorouracil (1) (3) (6)**

Fluoxetine (1) (3).....	Prozac
Fluoxymesterone (1).....	Halostensin
Flurbiprofen (1) .....	Ansaid
Fluvastatin (1) .....	Lescol
Fluvoxamine (1) .....	Luvox
Foscarnet (1) .....	Foscavir

### G

Gabapentin (1).....	Neurontin
Ganciclovir(1) .....	Cytovene
<b>Gemcitabine (1) (6)</b> .....	<b>Gemzar</b>
Gemfibrozil (1) .....	Lopid
Glatiramer (1) .....	Copaxone
Gold and gold compounds (1) (3)	
Goserelin (1) .....	Zoladex
Granisetron (1) .....	Kytril
Granulocyte colony-stimulating factor (G-CSF) (1) (6)	
Guanethidine (1).....	Ismelin
Guanfacine (1) .....	Tenex

### H

Haloperidol (1).....	Haldol
Halothane (1) .....	Fluothane
Heparin (1) (2) (3) (5) (6).....	Hep-Flush
Hepatitis B Vaccine (3) .....	Recombivax HB
Hexamethylmelamine (5)	



Hydantoin derivatives (1) .....	Pilantin
Hydromorphone (1) .....	Dilaudid
<b>Hydroxycarbamide (6)</b>	
Hydroxychloroquine (1).....	Plaquenil
<b>Hydroxyurea (1) (3) (6)</b> .....	<b>Droxia</b>

**I**

Ibuprofen (1).....	Advil
<b>Idarubicin (1) (3) (6)</b> .....	<b>Idamycin</b>
<b>Ifosfamide (1) (3) (6)</b> .....	<b>Ifex</b>
Immunoglobulin (3)	
Imipramine (3).....	Tofranil
Indinavir (1) (3) .....	Crixivan
Indomethacin (1) (2) (4).....	Indocin
Interferons (1) (3) (6)	Interferons Beta (1)-A:Avonex Interferons Beta (1)-B:Betaseron Interferons Alfa-(2): Infergen
Ipratropium (1).....	Combivent
Irinotecan (1) .....	Camptosar
Isoniazid (1) .....	Rifamate
Isotretinoin (1) (6).....	Accutane
Itraconazole (1).....	Sporanox

**K**

Ketoconazole (1).....	Nizoral
Ketoprofen (1) .....	Orudis

**L**

Labetalol (1) .....	Normodyne
Lamivudine (1).....	Combivir
Lamotrigine (1).....	Lamictal
Lansoprazole (1) .....	Prevacid
Leflunomide (1) (6).....	Arava
Letrozole (1).....	Femara
Leucovorin (1)	
Levodopa (3) (4) (5) .....	Sinemet
Leuprolide (1) .....	Lupron
Levamisole (1).....	Ergamisol
Levobetaxolol (1).....	Betaxon
Levobunolol (1) (3) (6).....	Betagan
Levodopa (1) (2) (3).....	L-dopa
Levothyroxine (1).....	Eltroxin
Liothyroxine (1).....	Triostat

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Lisinopril (1).....	Zestril
Lithium (1).....	Eskalith
Lithium carbonate (1) (2) (3) (6)	
<b>Lomustine (1) (3) (6)</b> .....	<b>CeeNU</b>
Loperamide (1).....	Maalox
Loratadine (1).....	Claritin
Lorazepam (1).....	Ativan
Losartan (1).....	Cozaar
Lovastatin (1).....	Advicor
Loxapine (1).....	Loxitane

## M

Maprotiline (1).....	Ludiomil
Mebendazole (1) (3).....	Vermox
<b>Mechloroethamine (1) (3) (6)</b> .....	<b>Mustargen</b>
Meclofenamate (1)	
<b>Medroxyprogesterone(1) (6)</b> .....	<b>Depo-Provera</b>
Mefloquine (1).....	Lariam
<b>Melphalan (1) (3) (6)</b> .....	<b>Alkeran</b>
Memantine (1).....	Namenda
Mepacrine (5).....	Atabrine
Mephenytoin (1).....	Mesantoin
<b>Mercaptopurine (1) (6)</b> .....	<b>Purinethol</b>
Mesalamine (1).....	Asacol
Mesoridazine (1).....	Serentil
Metformin (1).....	Glucovance
Methimazole (1).....	Tapazole
Methotrexate (1) (2) (3) (5) (6).....	Rheumatrex
Methsuximide (1).....	Celontin
Methyl dopa (1).....	Aldoclor
Methylphenidate (1).....	Ritalin
Methyltestosterone (1).....	Metandren
Methylthiouracil (3)	
Methysergide (1) (3).....	Sansert
Metoprolol (1) (3) (5).....	Lopressor
Mexiletine (1).....	Mexitil
Minocycline (1) (3).....	Dynacin
Minoxidil (1).....	Rogaine
<b>Misoprostol (1) (3) (6)</b> .....	<b>Cytotec</b>
<b>Mitomycin (1) (6)</b> .....	<b>Mutamycin</b>
Mitotane (3).....	Lysodren
Mitoxantrone (1) (6).....	Novantrone

Moexipril (1) ..... Univasc  
 Mycophenolate (1)..... CellCept

**N**

Nabumetone (1)..... Relafen  
 Nadolol (1) (5) ..... Corgard  
 Nalidixic acid (1) ..... NegGram  
 Naltrexone (1)..... Revex  
 Naproxen (1) ..... Aleve  
 Naratriptan (1)..... Amerge  
 Nefazodone (1) ..... Serzone  
 Neomycin (1) ..... Neosporin  
 Nifedipine (1)..... Procardia  
 Nimodipine (1) ..... Nimotop  
 Nisoldipine (1) ..... Sular  
 Nitisinone (1)..... Orfadin  
 Nitrofurantoin (1)..... Furadantin  
 Nitrosureas (3)  
 Nortriptyline (1)..... Aventyl

**O**

Octreotide (1) ..... Sandostatin  
 Olanzapine (1)..... Zyprexa  
 Omeprazole (1)..... Prilosec  
 Ondansetron (1) ..... Zofran  
 Oral Contraceptives (1) (3) (4)  
 Oxaliplatin (1) ..... Eloxatin  
 Oxcarbazepine (1) ..... Trileptal

**P**

**Paclitaxel (6) ..... Taxol**  
 Pantoprazole (1)..... Protonix  
 Paramethadione (1) ..... Paradione  
 Paroxetine (1)..... Paxil  
 Peg-interferon Alfa-(2)B (1)  
 PEG-Intron (1)  
 Pegfilgrastim (1)..... Neulasta  
 Penbutolol (1) ..... Levatol  
 Penicillamine (1) (5)..... Cuprimine  
 Penicillins (1)  
 Pentosan (1) ..... Elmiron  
**Pentostatin (1) (6)..... Nipent**  
 Pergolide (1) ..... Permax

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Phensuximide (1).....	Milontin
Phentermine (1).....	Fastin
Phenytoin (1).....	Dilantin
Pindolol (1).....	Visken
Pirbuterol (1).....	Maxair
Piroxicam (1).....	Feldene
Pravastatin (1).....	Pravachol
Prazepam (1).....	Centrax
Prazosin (1).....	Minizide
Probenecid (1).....	Benemid
<b>Procarbazine (1) (3) (6).....</b>	<b>Procan</b>
Progestins (1)	
Proguanil (3)	
Propafenone (1).....	Rythmol
Propranolol (1) (2) (3) (4) (5).....	Inderal
Propylthiouracil (1) (3).....	Propylthiouracil
Protriptyline (1).....	Vivactil
Pyridostigmine bromide (3) (5)	
Pyrimethamine (1).....	Daraprim

### Q

Quazepam (1).....	Doral
Quinacrine (1) (2) (4).....	Atabrine
Quinidine (1).....	Cardioquin
Quinine (2).....	Legatrin

### R

Rabeprazole (1) (6).....	Aciphex
Ramipril (1).....	Altace
Ranitidine (1).....	Zantac
Retinol, Retinoids (3) (4) (5)	
Ribavirin (1).....	Rebetol
Riluzole (1)	
Risperidone (1).....	Risperdal
Ritonavir (1).....	Norvir
Rivastigmine (1).....	Exelon
Ropinirole (1).....	Requip

### S

Saquinavir (1).....	Fortovase
Selegiline (1).....	Eldepryl
Selenium (1).....	Head & Shoulders
Sertraline (1).....	Zoloft

Simvastatin (1) .....	Zocor
Sodium cromoglycate (1) .....	Crolom
Sotalol (1) .....	Betapace
Sparfloxacin (1) .....	Zagam
Spiro lactone (1) .....	Aldactone
St. John's Wort (1)	
Stanozolol (1) .....	Winstrol
Sulfasalazine (1) (3) (5) .....	Azulfidine
Sulfisoxazole (1) .....	Pediazole
Sulindac (1) .....	Clinoril

**T**

Tacrine (1) .....	Cognex
Tacrolimus (1) .....	Protopic
Tamoxifen (1) .....	Nolvadex
Terbinafine (1) (6) .....	Lamisil
Testosterone (1) (2) .....	Androderm
Thalidomide (1) .....	Contergan
Thallium (2) (4)	
<b>Thioguanine (1) (6) .....</b>	<b>Contegram</b>
Thioridazine (1) .....	Mellaril
<b>Thiotepa (1) (6) .....</b>	<b>Thioplex</b>
Thiothixene (1) .....	Navane
Thiouracil (2) (3)	
Tiagabine (1) .....	Gabitril
Timolol (1) (3) (6) .....	Betimol
Tinazaparin (1) .....	Innohep
Tiopronin (1) .....	Thiola
Tocainide (1) .....	Tonocard
Tolcapone (1) .....	Tasmar
Topiramate (1) .....	Topamax
Topotecan (1) (6) .....	Hycamtin
Trazodone (1) .....	Desyrel
Tranlycpromine (3) .....	Parnate
<b>Triazolam (1) .....</b>	<b>Halcion</b>
Triethylenethiophosphoramide (3)	
Trimethadione (1) (2) (5) .....	Tridione
Trimipramine (1) .....	Surmontil
Triparanol (3)	
Triptorelin (1) .....	Trelstar

**U**

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Urofollitropin (1) .....	Bravelle
Ursodiol (1) .....	Actigall

### V

Valdecoxib (1) .....	Bextra
Valproic acid (1) (3) (6) .....	Depacon
Valproate sodium (2) (5)	
<b>Vasopressin (1) (6) .....</b>	<b>Pitressin</b>
Venlafaxine (1) .....	Effexor
Varapamil (1) .....	Covera-HS
<b>Vinblastine (1) (3) (6) .....</b>	<b>Velban</b>
<b>Vincristine (1) (3) (6) .....</b>	<b>Oncovin</b>
<b>Vinorelbine (1) (6) Navelbine</b>	
Vitamin A (1) (3) (4) .....	Aquasol A
Voriconazole (1) .....	Vfend

### W

Warfarin (6) .....	Coumadin
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### Z

Zalcitabine (1) .....	Hivid
Zaleplon (1) .....	Sonata
Zidovudine (1) .....	Combivir
Ziprasidone (1) .....	Geodon
Zonisamide (1) .....	Zonegran

# GLOSSARY

## A

**Aldactone:** Brand name for spironolactone, a prescription high blood pressure medication that may also be prescribed to treat hair loss in women.

**Alopecia:** Medical term for hair loss.

**Alopecia areata:** An auto immune disease in which the body's immune system attacks certain hair follicles, resulting in patchy hair loss, usually on the scalp. The bald patches may regrow hair within a few months, or the hair loss may persist for many years.

**Alopecia totalis:** A variation of alopecia areata in which all scalp hair is lost.

**Alopecia reduction:** Commonly called a scalp reduction. A surgical procedure in which a portion of the bald scalp is removed and the edges are pulled together and sutured closed.

**Alopecia universalis:** A variation of alopecia areata in which all body hair is lost.

**Anagen phase:** Growth phase of a hair follicle, during which the hair shaft grows about a half inch per month. The anagen phase of scalp hair follicles typically lasts four to six years. Hair follicles in other areas such as the eyelashes, have shorter anagen phases, resulting in shorter hairs.

**Androgens:** A class of hormones commonly called "male" hormones, because of their higher concentration in adult men, than adult women. Testosterone and Dihydrotestosterone (DHT) are both androgens.

**Androgenetic alopecia:** The medical term for inherited hair loss. Androgenetic refers to an inherited sensitivity to certain androgens, specifically DHT, which signals susceptible hair follicles to stop growing. Alopecia is the medical term for hair loss.

**Appliance:** A common industry name for a hairpiece.

## Glossary

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**Autograft:** A surgical transfer of tissue from one part of an organism to another part of the same organism. Hair transplants are autograft procedures, as the patient is always his or her own “donor”.

**Autoimmune disease:** A medical disorder in which an organism’s immune system turns against itself. The cause of most autoimmune disorders is unknown, and there may be periods when the white blood cells attack certain tissue, and other periods where there are no symptoms. Alopecia areata is an autoimmune disease in which the rapidly dividing cells in the hair follicle bulb are attacked. Treatments include steroid hormones and other non-steroid anti-inflammatory medications.

### B

**Bulb:** The part of the hair follicle that lies deepest in the skin, surrounding the hair matrix and dermal papilla cells, which rapidly divide to produce the hair shaft.

**Bulge:** An area located near the middle of the hair follicle, below the sebaceous (oil) gland and near the attachment point for the arrector pili muscle (the tiny muscle that allows hairs to “stand on end”). The bulge is believed to be where hair follicle stem cells are located, which begin the process of rebuilding the hair follicle as each new growth phase starts.

### C

**Castration:** The removal of sex organs in men or women, either by surgical or chemical means. Removal of testicles in men decreases testosterone levels to such a degree that the enzyme 5-alpha-reductase is only able to convert a small amount of testosterone into DHT, and as a result of the low levels of DHT, the DHT-sensitive hair follicles don’t get the message to stop growing new hairs. In 420 BC Hippocrates, the Father of Modern Medicine, observed that castration before puberty prevented baldness. Castration after puberty will stop further hair loss, but will not help regrow hair that was lost earlier. The side effects of this hair loss treatment method are severe.

**Catagen phase:** The regression phase of the cycle of hair growth. It follows the anagen (growth) phase, and precedes the telo-



gen (resting) phase. During the catagen phase, the hair stops growing and the lower portion of the hair follicle begins to disintegrate.

**Chemotherapy:** A type of treatment commonly used after cancer surgery or radiation treatment that uses powerful chemicals to interfere with tumor growth. The chemicals also affect some healthy tissue, especially fast growing cells such as those in hair follicles, resulting in temporary hair loss.

**Cortisone:** A steroid hormone often used to treat alopecia areata. It is believed to confuse the white blood cells mistakenly attacking the hair follicles, and thereby allow the hair follicles to recover and grow hair again.

## D

**Dandruff:** Dandruff is a scalp condition characterized by excessive scaling and skin flake shedding. Dandruff is sometimes accompanied by itching, and often oiliness, but without visible redness or inflammation. Although the exact cause of dandruff is not completely understood, the condition is associated with an increase in the population of certain microorganisms that naturally occur on the scalp, including *Pityrosporum ovale*, a yeast-like fungus that lives in the oil glands and hair follicles on the scalp. The cause of the increase in the population of *Pityrosporum ovale* is not well understood, and dandruff conditions often change over time, even without treatment. Dandruff does not cause hair loss.

**Dermal papilla:** A variety of rapidly dividing cells inside the hair bulb. The dermal papilla cells connect with the bundle of blood capillaries that nourish the hair follicle.

**Dermatologist:** A medical doctor who is trained to treat conditions affecting the skin, hair and nails.

**DHT:** Abbreviation for Dihydrotestosterone.

**Dihydrotestosterone:** A naturally occurring hormone in the blood that in men and women with an inherited tendency for hair loss, signals hair follicles sensitive to dihydrotestosterone to stop growing new hairs. The enzyme 5-alpha-reductase converts some testosterone in the blood into dihydrotestosterone.

**Donor area:** The area on the scalp selected for having hair follicles that are DHT-resistant, and will likely continue growing new

## Glossary

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hairs for the individual's lifetime. The donor area is typically the back of the scalp, and the sides extending behind the ears. The donor area is the part of the scalp that in "pattern baldness" does not get bald.

**Dutasteride:** A 5-alpha-reductase inhibitor medication that inhibits both type-I and type-II 5-alpha-reductase.

### E

**Enzyme:** A type of protein that alters other proteins, and organic molecules. The enzyme 5-alpha-reductase converts the hormone protein testosterone into dihydrotestosterone (DHT).

**Estrogen:** A class of hormones commonly called "female" hormones, because of their higher concentration in adult women, than adult men. Estrogens are the active ingredient in birth control pills, and are also used treat symptoms of menopause. High estrogen levels in the blood of women can interfere with their DHT-sensitive hair follicles from getting the message to stop growing new hairs. When estrogen levels decline, the message begins to get through, and thinning hair can result.

**Extension:** A type of partial wig that adds long hairs to shorter existing hair.

### F

**Female pattern hair loss:** The counterpart to the more common phrase "male pattern baldness," female pattern hair loss describes the typical pattern of hair loss suffered by women who have DHT-sensitive hair follicles. Typically women do not get clear bald patches or receding hairlines, but their hair does get thin on top and to a lesser degree on the sides and back of the scalp. The donor area for women electing to have hair transplants is the same as for men: the back of the scalp.

**Ferritin:** An iron-binding protein necessary for red blood cell function. A low ferritin level in the blood is an indication of iron-deficiency anemia.

**Finasteride:** The generic name for the active ingredient in Propecia. 5-alpha-reductase: an enzyme that converts testosterone in the blood into dihydrotestosterone (DHT). There are two types of 5-alpha-reductase, called type-I and type-II. Medications that interfere with 5-alpha-reductase can stop hair loss.

**Follicle:** The miniature organ in the skin that grows hair. Each follicle grows a single hair during a growth phase, and then the follicle regresses and shrinks in size, sheds the hair, rests for a period of time, and then grows back to full size as it begins a new growth phase.

**Follicular unit:** A micrograft hair transplant term that refers to naturally occurring clusters of hair follicles. Follicular unit micrografts contain intact clusters of hair follicles which produce natural-looking clusters of hair when they are transplanted. A follicular unit may be a single follicle, or may have two, three, or more follicles.

**Full size graft:** A circular skin graft about the size of a split pea, containing seven to fifteen hair follicles. Full size grafts were the standard size graft for hair transplants before micrografting techniques improved the survival rate of smaller grafts. Full size grafts are sometimes called “plugs” by those not in the hair restoration surgery business.

## G

**General anesthesia:** Medication that puts the patient “to sleep” during a surgical procedure. General anesthesia has greater risk of medical complications than local anesthesia, and may require a doctor specially trained in anesthesiology to administer the medication.

**Gene:** A portion of a DNA molecule that contains instructions for making a particular protein, such as a hormone.

**Genetic:** Inherited, as a result of receiving the same genes as one’s ancestors.

## H

**Hair addition:** A partial wig constructed of human or synthetic hair typically used to add the appearance of length to existing hair. Hair additions are often attached by a comb or by weaving into existing hair.

**Hairpiece:** A partial wig constructed of human or synthetic hair attached to a lightweight mesh base. Hairpieces are constructed so that their hairs blend in with the remaining growing hairs on the user. Hairpieces may be attached by a variety of methods, however double-sided tape and liquid adhesives are most commonly used.

**Hair:** A long cylinder of dead cells containing high concentrations of keratin protein.

**Hair Replacement:** A common industry name for a hairpiece.

**Hair shaft:** A hair.

**Hair transplant:** A surgical procedure in which tissue containing hair follicles from a donor site such as the back of the scalp are selected for resistance to genetic hair loss and are surgically removed, cut into grafts containing one or more follicles, and the grafts are then placed into recipient sites in the locations such as the hairline and top of the scalp. The transplanted hair follicles establish new connections to the blood supply, and begin growing new hairs, just as they would have at their original location. By redistributing the patient's hair follicles, hair transplants very effectively achieve the illusion of a fuller head of hair.

**Hirsutism:** Excessive body hair in a male pattern. Hirsutism can affect both men and women, and may be caused by heredity, hormone imbalances, or medications.

**Hormone:** A type of protein that travels through the bloodstream to signal specific cellular activity.

**Hypertrichosis:** A medical term for excessive hair growth.

## I

**Implants:** In contrast to transplants of live hair follicle grafts, implants refer to surgical placement of synthetic fibers, or strands of hair, into the scalp. The procedure results in severe immune response as the body attacks the foreign substance, and implants have been banned in the United States. They are still legal to perform in some other countries, however.

## J - K

**Keratin:** A structural protein found in hair, and also skin, nails, and tooth enamel.

## L

**Local anesthetic:** Medication injected at a specific location to numb the sensation of pain. In surgical procedures involving local anesthetic, the patient is awake.

## M

**Male pattern baldness:** A common way of describing the appearance of androgenetic alopecia, the tendency for inherited hair loss in men. The pattern typically begins with a receding hairline or thinning at the crown, or both. Eventually the hairline recedes, and the top of the head becomes bald, leaving only a fringe of hair at the back of the scalp and behind the ears. The hair follicles in the bald areas are genetically programmed at birth to be sensitive to DHT in the blood, and slowly stop producing new hairs. The hair follicles in the scalp on the back and sides are genetically programmed to be DHT-resistant.

**Menopause:** The end of menstruation and reproductive capability in women as a result of decreased estrogen production. Typically women begin perimenopause around age forty, and by age fifty-five to fifty-eight most women are in menopause. Decreased estrogen levels can allow DHT-sensitive hair follicles to stop growing new hairs, and result in thin hair in post-menopausal women.

**Micrograft:** A skin graft about the size of half a grain of rice, typically containing one to three hair follicles. Micrografts are the standard graft for hair transplants today. Micrografts that are comprised of naturally occurring clusters of hair follicles are called follicular unit micrografts.

**Minoxidil:** The generic name for the active ingredient in Rogaine lotion.

**Mitosis:** The process of cell division for growth and repair of tissue.

## N - O

**Oral contraceptive:** Birth control pills. Oral contraceptives contain estrogens, which can help some women with declining estrogen levels and a genetic tendency for hair loss to keep their hair.

## P

**Plugs:** A common name for full size hair transplant grafts.

**Prostate gland:** A small organ in men only that surrounds the neck of the bladder, and that secretes various enzymes including type-II 5-alpha-reductase.

**Propecia:** Currently the most effective hair loss treatment medication. Propecia tablets contain the medication finasteride.

### Q - R

**Recipient area:** The portion of the scalp where hair transplant grafts are placed. The recipient area includes bald and thin areas, as well as areas that are likely to become thin as a result of future hair loss.

**Rogaine:** Brand name for the lotion form of the hair loss treatment medication minoxidil.

### S

**Scalp reduction:** Sometimes called an alopecia reduction, it refers to the removal of the bald scalp. A surgical procedure in which a portion of the bald scalp is removed and the edges are pulled together and sutured closed.

**Spironolactone:** The generic name for the active ingredient in the medication Aldactone. Spironolactone is a potent anti-androgen, and binds to DHT receptor sites on hair follicles, thereby blocking DHT from getting its hair loss message to the follicles.

**Stem cells:** Undifferentiated cells that produce intermediate cells called transient amplifying cells, which in turn produce specialized cells as the organism needs them.

### T

**Telogen:** The resting stage of the cycle of hair growth.

**Testosterone:** The most well known androgen hormone, found in both men and women, but in higher concentrations in men. Some testosterone in the blood is converted by 5-alpha-reductase into dihydrotestosterone (DHT), which signals DHT-sensitive hair follicles to stop growing new hairs.

**Topical:** A medication applied to the surface of the skin, in liquid, cream, ointment, gel, foam, paste, tincture or lotion form.

**Toupee:** An old-fashioned name for a hairpiece.

**Traction alopecia:** A type of hair loss that results from pulling on the hair, typically from tight hairstyles such as cornrows and ponytails. The hair loss is temporary; repeated pulling will prematurely age the follicles and could eventually result in permanent hair loss.

**Trichotillomania:** A psychological disorder in which a person pulls out his or her own hair. The condition is typically seen in young children who pull on their hair at night during sleep, but can also occur in adults and while awake. The hair loss is temporary. Repeated pulling will prematurely age the follicles and could eventually result in permanent hair loss.

### U

**Unit:** A common industry name for a hairpiece.

### V - W

**Weave:** A type of hairpiece that is attached to the scalp by weaving the growing hairs through the edge of the hairpiece. Weaves do not involve the use of adhesives, but must be reattached after a few weeks as the attachment hairs grow out or become loose.

**Wig:** An artificial hair device that completely covers the scalp, and temporarily replaces whatever hair the user has (if any) with synthetic or human hair that makes up the wig. Wigs may be attached by a variety of methods, including adhesives, double-sided tape, and for users with no hair on their scalp, by vacuum fit.





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