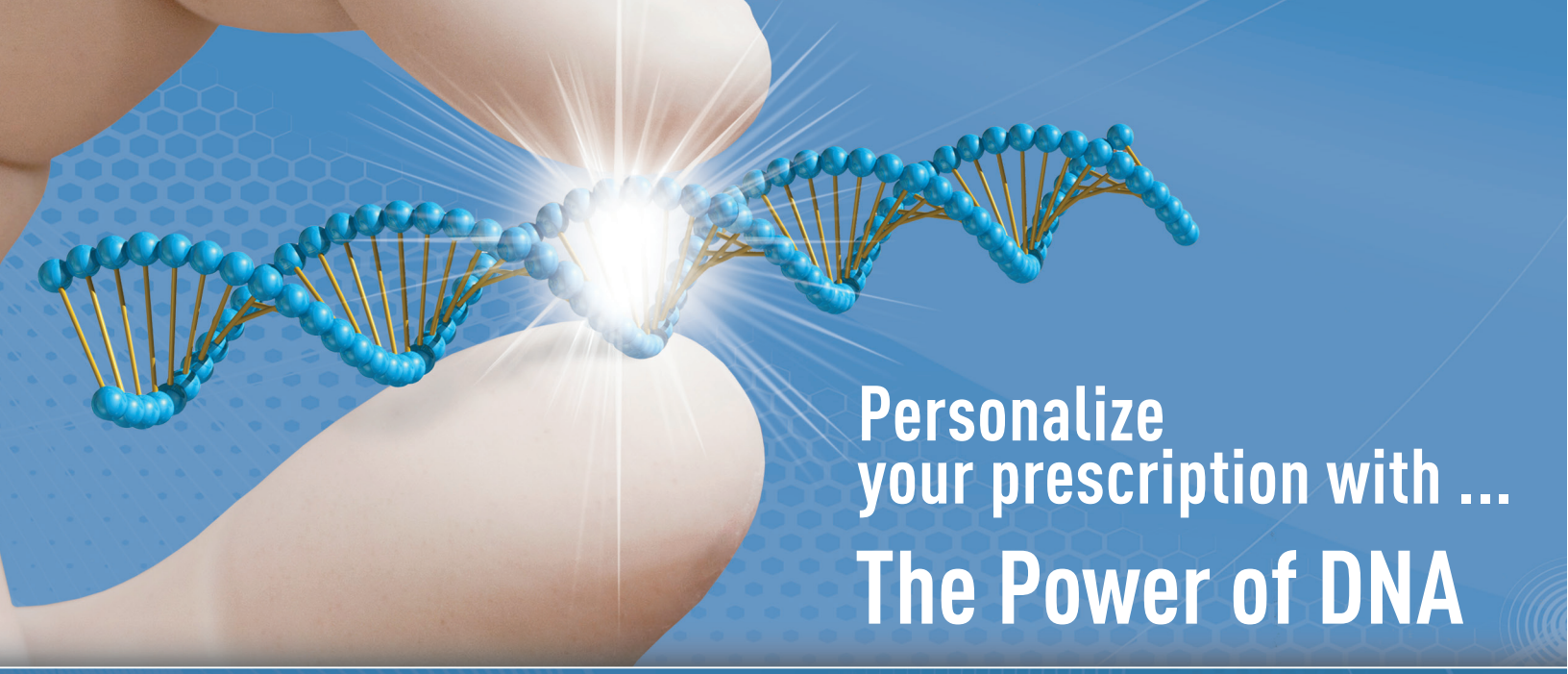

Personalize your prescription with ...

The Power of DNA

DNA DrugMap™

Salivary DNA tests to personalize prescription and dosing decisions

Drug metabolism affects your patients' health and well-being:

- 90% of all FDA-approved drugs are metabolized by one or more of the CYP450 enzymes
- DNA DrugMap™ tests identify genetic variations that predict changes in enzyme activity
- Health professionals can use this information to personalize care
- Our genetic counselors and physicians are on-call to help

Tests available from a single oral rinse:

- DNA DrugMap™ 2C9/VKORC1 (Example: Warfarin* and some NSAIDs such as Ibuprofen)
- DNA DrugMap™ 2C19 (Example: Clopidogrel*)
- DNA DrugMap™ 2D6 (Example: Codeine, Oxycodone and some Antidepressants)
- DNA DrugMap™ 3A4/3A5 (Example: Erythromycin and many Opioids)
- DNA DrugMap™ Profile (Includes all of the above tests)

For ease of ordering, a table of drugs and relevant tests is available on the OralDNA.com website

* The report will include dosing guidelines for these drugs

For more information, contact:
855-ORALDNA or visit **www.OralDNA.com/professionals**

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Innovations in Salivary Diagnostics

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DNADRUGMAP

FINAL REPORT

ORALDNA LABS
Innovations in Salivary Diagnostics

Sample, Report

Date Of Birth: 10/23/1985
Gender: Male

Ordering Provider (ODNA0001)

James Fleming
7400 Flying Cloud Drive
Eden Prairie, MN 55344

Sample Information

Accession: 46819444
Specimen: Oral Rinse
Collected: 02/03/2014

Received: 02/05/2014
Reported: 02/05/2014 15:57

CYP2C19 GENOTYPING (E.G. PLAVIX(TM) METABOLISM)

Gene Marker	Result	Predicted Effect	Recommendation for Clopidogrel Dosing
CYP2C19	Alleles:*1/*17	Ultrarapid Metabolizer (UM)	Label recommended dosage and administration

Interpretation: This genotype is associated with an ultrarapid metabolizer phenotype. See comment.

Comments:
Ultrarapid metabolizers show increased enzymatic activity and may be at increased risk of an adverse drug response. Individuals with this genotype may show an enhanced response to clopidogrel and an increased risk for bleeding. This genotype result is but one factor affecting drug metabolism. Other genetic and clinical factors should also be considered. Dosing guidelines and drug labels are available online http://www.pharmgkb.org. For questions regarding genotype results interpretation, please contact Genetic Services at 855-323-0680.

Recommendations for Clopidogrel Dosing Based on CYP2C19 Genotyping Results

Metabolizer Phenotype	Implications for Clopidogrel	Recommendation for Dosing	Classification of Recommendation
Normal (Extensive) Metabolizer (NM) and Ultrarapid Metabolizer (UM)	Normal (NM) or increased (UM) platelet inhibition: normal (NM) or decreased (UM) residual platelet aggregation	Clopidogrel label-recommended dosage and administration	Strong
Intermediate Metabolizer (IM)	Reduced platelet inhibition: increased residual platelet aggregation: increased risk for adverse cardiovascular events	Prasugrel or other alternative therapy (if no contraindication)	Moderate
Poor Metabolizer (PM)	Significantly reduced platelet inhibition: increased residual platelet aggregation: increased risk for adverse cardiovascular events	Prasugrel or other alternative therapy (if no contraindication)	Strong

Methodology:Genomic DNA is extracted from the submitted sample and subjected to multiplex polymerase chain reaction (PCR) amplification. The PCR product is subjected to exonuclease digestion to yield single stranded target DNA. This product is hybridized to allele-specific oligonucleotide capture probes and ferrocene labeled signal probes bound to gold-plated electrodes. Specific electrical signals from each single-stranded target DNA-capture probe-signal probe complex are generated and detected by voltammetry. Automated allele calling software is then used to analyze the data file generated and interpret the *1, *2, *3, *4, *5, *6, *7, *8, *9, *10, *13 and *17 alleles of the cytochrome P450 2C19 gene locus. The analytical and performance characteristics of this laboratory-developed test (LDT) were determined by OralDNA Labs, A Service of Access Genetics, LLC pursuant to Clinical Laboratory Improvement Amendments (CLIA 88) requirements. It has not been cleared or approved by the U.S. Food and Drug Administration (FDA). The FDA has determined that such clearance or approval is not a requirement prior to use for clinical purposes. Testing performed by OralDNA Labs, A Service of Access Genetics, LLC, Eden Prairie, MN

Interpreter: OralDNA Reviewer

Genotyping Results	
CYP2C19 Genotyping (e.g. Plavix(tm) metabolism)	681G>A (*2): A/A 636G>A (*3): A/A 1A>G (*4): A/G 1297C>T (*5): C/C 395G>A (*6): G/G 19294T>A (*7): T/T 358T>C (*8): C/C 431G>A (*9): G/G 680C>T (*10): C/C 1228C>T (*13): C/C -806C>T (*17): T/T

DNA DRUGMAP ™

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Table of Drugs and Relevant Tests

Drugs Metabolized by CYP2C9

Cardiovascular: warfarin, losartan, irbesartan, fluvastatin, torsemide
Diabetes: tolbutamide, glipizide, glyburide, glimepiride, nateglinide rosiglitazone
NSAIDs: diclofenac, ibuprofen, meloxicam, naproxen, piroxicam, suprofen, celecoxib
Miscellaneous: amitriptyline, fluoxetine, phenytoin, tamoxifen, other drugs not listed

Drugs Metabolized by CYP2C19

Antibiotic/Antiviral: chloramphenicol, nelfinavir
Anti-convulsant: diazepam, phenytoin, mephenytoin, primidone
Cardiovascular: clopidogrel, propranolol, warfarin
Proton Pump Inhibitors: lansoprazole, omeprazole, pantoprazole, rabeprazole
Psychiatric: mephobarbital, citalopram, amitriptyline, clomipramine, imipramine
Micellaneous: carisoprodol, indomethacin, cyclophosphamide, other drugs not listed

Drugs Metabolized by CYP2D6

Cardiovascular: carvedilol, metoprolol, propafenone, timolol, nebivolol, propranolol, clonidine, encainide, flecainide, mexiletine
Pain Management: codeine, oxycodone, tramadol
Psychiatric: amitriptyline, clomipramine, desipramine, fluoxetine, imipramine, paroxetine, venlafaxine, haloperidol, perphenazine, risperidone, thioridazine, amphetamine, aripiprazole, atomoxetine, chlorpromazine, duloxetine, fluvoxamine, nortriptyline
Micellaneous: tamoxifen, chlorpheniramine, dexfenfluramine, other drugs not listed

Drugs Metabolized by CYP3A4 and/or CYP3A5

Antibiotics/Antivirals: clarithromycin, erythromycin, indinavir, nelfinavir, ritonavir, saquinavir, telaprevir, boceprevir, dapsone
Cardiovascular: quinidine, amlodipine, diltiazem, felodipine, nifedipine, nisoldipine, verapamil, atorvastatin, lovastatin, simvastatin, cilostazol, eplerenone, propranolol
Chemotherapeutic: docetaxel, imatinib, irinotecan, sorafenib, sunitinib, tamoxifen, taxol, temsirolimus, vincristine
Immune Modulators: cyclosporine, tacrolimus
Pain Management: alfentanil, codeine, fentanyl, LAAM, methadone
Psychiatric: alprazolam, diazepam, midazolam, triazolam, aripiprazole, buspirone, haloperidol, pimozide, quetiapine, risperidone, trazodone, ziprasidone
Steroids: estradiol, hydrocortisone, progesterone, testosterone
Miscellaneous: aprepitant, cafergot, chlorpheniramine, dexamethasone, dextromethorphan, finasteride, lidocaine, nateglinide, ondansetron, quinine, salmeterol, sildenafil, sirolimus, zaleplon, zolpidem, other drugs not listed

OralDNA Labs • 7400 Flying Cloud Drive • Eden Prairie, MN 55344 • 855-ORALDNA