



**HOPE FOR DEPRESSION**  
RESEARCH FOUNDATION

- **Lecture:**        *“Depression - The Cancer of the 21<sup>st</sup> Century“*
- **Event:**         HOPE Scientific Seminar & Luncheon  
Palm Beach - February 20<sup>th</sup>, 2009
- **Speaker:**      **J. Raymond DePaulo, Jr., M.D.**  
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Director, Department of Psychiatry and Behavioral  
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Medicine

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## **DEPRESSION**

### **The Cancer of the 21<sup>st</sup> Century**

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**J. Raymond DePaulo, Jr., M.D.**

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Department of Psychiatry and Behavioral Sciences  
The Johns Hopkins University School of Medicine

### **What is Depression?**

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**Depression:** When your dog dies and you feel sad. (an emotion)

**Depression:** Pessimism (personality trait)

**Depression:** Clinical depression (emotional disorder, brain disease or both?)

### **Features of Clinical Depression**

**Pervasive Change in Mood:**  
Sad, anxious, apathetic

**Low Self-Worth:**  
Hopeless, worthless

**Low Energy-Vitality:**  
Fatigue, poor concentration

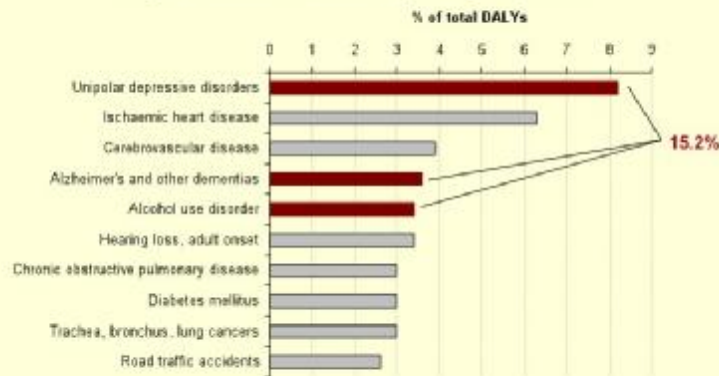
**Remissions and relapses are typical course**



"I'm falling down in my head, I no longer wish to live, to see anything, hear anything, feel anything...I'm fed up with life, I've had enough...I don't want to live any more"

## Disease Burden by Illness - DALY

High Income Countries | All Ages | 2004



DALY = Disability-Adjusted Life Year (measures healthy life years lost to premature death and disability)

Source: World Health Organization - Burden of Disease Statistics, 2004

## Ten Leading Causes of Burden of Disease

World | 2004 and 2030

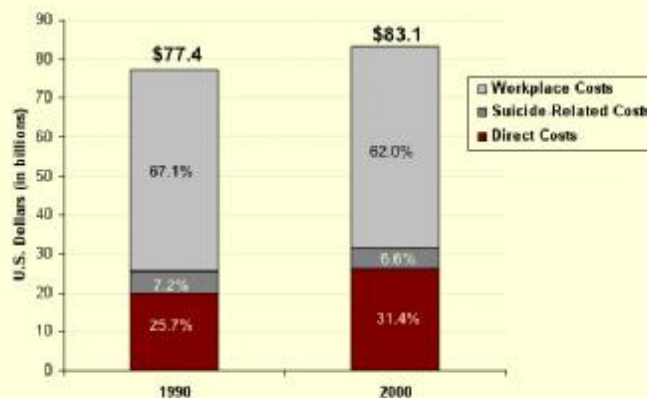
2004 Disease or injury	As % of total DALYs	Rank	Rank	As % of total DALYs	2030 Disease or injury
Lower respiratory infections	6.2	1	1	6.2	Unipolar depressive disorders
Diarrhoeal diseases	4.8	2	2	5.5	Ischaemic heart disease
Unipolar depressive disorders	4.3	3	3	4.9	Road traffic accidents
Ischaemic heart disease	4.1	4	4	4.1	Cerebrovascular disease
HIV/AIDS	3.8	5	5	3.8	COPD
Cerebrovascular disease	3.1	6	6	3.2	Lower respiratory infections
Prematurity and low birth weight	2.9	7	7	2.9	Hearing loss, adult onset
Birth asphyxia and birth trauma	2.7	8	8	2.7	Refractive errors
Road traffic accidents	2.7	9	9	2.5	MM/AIDS
Neonatal infections and other <sup>a</sup>	2.7	10	10	2.3	Diabetes mellitus
COPD	2.0	13	11	1.9	Neonatal infections and other <sup>a</sup>
Refractive errors	1.8	14	12	1.9	Prematurity and low birth weight
Hearing loss, adult onset	1.8	15	15	1.9	Birth asphyxia and birth trauma
Diabetes mellitus	1.3	19	18	1.6	Diarrhoeal diseases

DALY = Disability-Adjusted Life Year (measures healthy life years lost to premature death and disability)

Source: World Health Organization - Burden of Disease Statistics, 2004

## Economic Burden of Depression in U.S.

1990 and 2000



SOURCE: Greenberg, PE et al, J Clin Psychiatry 64:12, Dec 2003

## Suicide Rates in Males from Lundby, Sweden 1947-1972

	Number of people interviewed	Suicides per 100,000 people per year
No Psychiatric Diagnosis	<b>29,809</b>	<b>8.34</b>
Non-Depressive Mental Disorder	<b>4,735</b>	<b>83.40</b>
Depressive Disorder	<b>1,475</b>	<b>654.00</b>
Total Interviews	<b>36,019</b>	

SOURCE: Hagnell, Lanke, and Rorsman 1981

### DEPRESSION: Cancer of the 21<sup>st</sup> century

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**1966** – Breaking the genetic code (Nirenberg) created a new molecular biology

#### **1968**

- Cancer stigmatized, common, and costly
- Enormous emotional impact on families;
- Little research ... thought to be hopeless
- Cytotoxic drugs and radiation had little benefit in survival or quality of life

### DEPRESSION: Cancer of the 21<sup>ST</sup> Century

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**1971** - U.S. Congress declares 'War on Cancer'

**1971-2007** - Molecular biology illuminates genetic and environmental pathways to cancer

#### **1980-2007**

- Multiple rational approaches to cancer emerge to target cell divisions, hormone receptors, angiogenesis, and immunologic pathways.
- Federally-funded **Cancer Centers** conduct largest, most successful clinical trials in history of medicine.

## Depression in the 21<sup>st</sup> Century

- Depression and bipolar disorder are prevalent, costly, and stigmatized.
- Families hide their illness history.
- Diagnoses are clinical and treatments are empathic and empirical (effective but poorly understood).

## Depression in the 21<sup>st</sup> Century

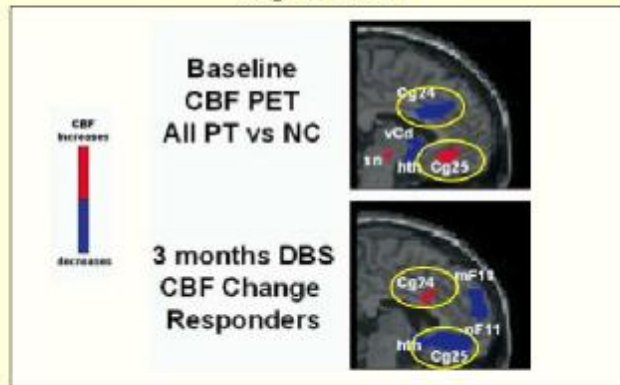
- Genetics, neurobiology, neuropharmacology, and brain imaging create potential to illuminate pathways to depression.
- Translating these will enable surer and faster diagnosis and lead to treatments that are rational and more effective.
- Understanding these disorders will change fundamentally the experience of patients and families.

## Mood Changes in Patient During Brain Stimulation for Treatment of Parkinson's Disease



## Brains of Depressed Patients Before and After Successful Treatment

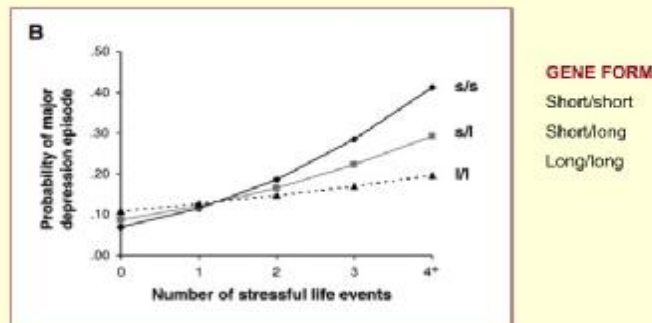
### Region CG 25



Source: Mayberg, HS. et al. Neuron, March 2005, Vol 45 651-656

## Influence of Life Stress on Depression

### Moderated by Variant Form of Gene for Serotonin Transporter



Caspi et al. Science, 2003

## Typical Double Blind Randomized Clinical Trials of Antidepressant-Placebo

