

The Role of Hormones in Breast Development and Cancer

Division of Cancer Biology

Tumor Biology and Metastasis Branch:

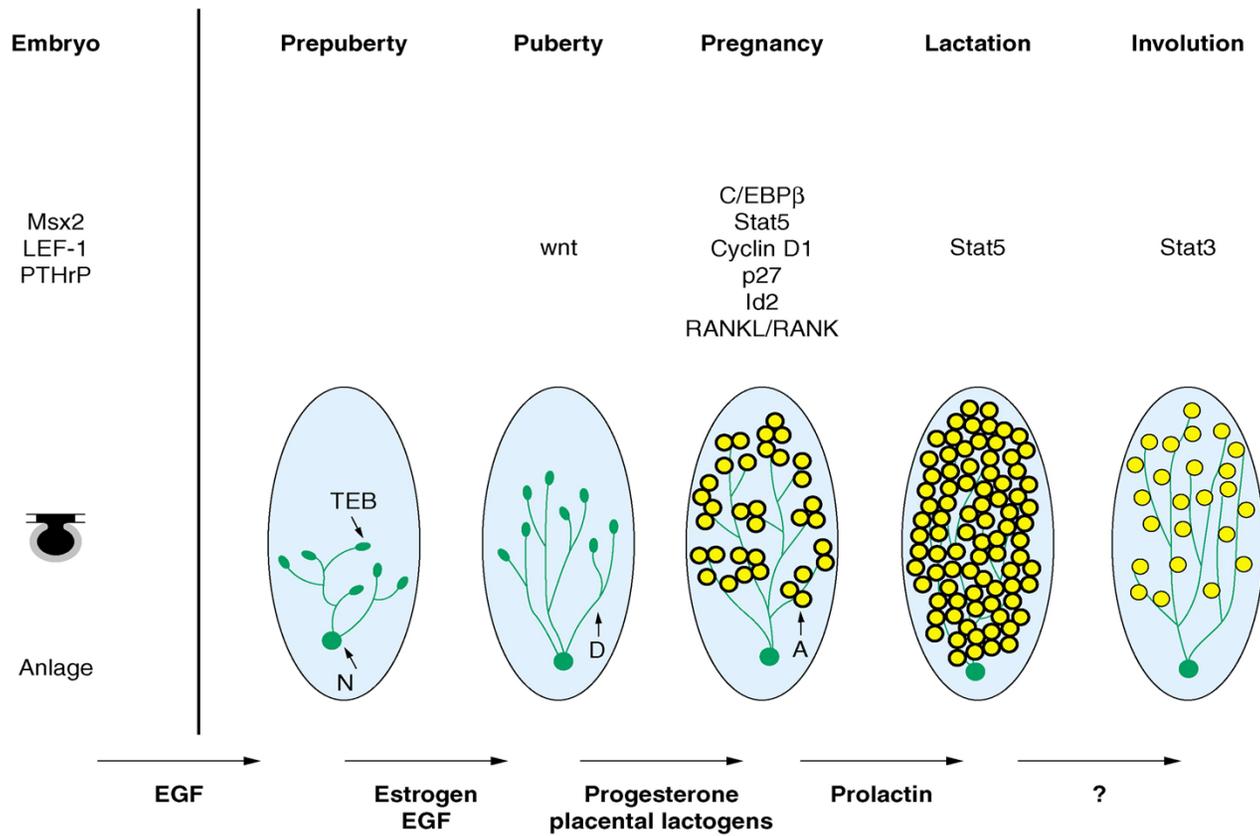
Dr. Suresh Mohla

Dr. Neeraja Sathyamoorthy

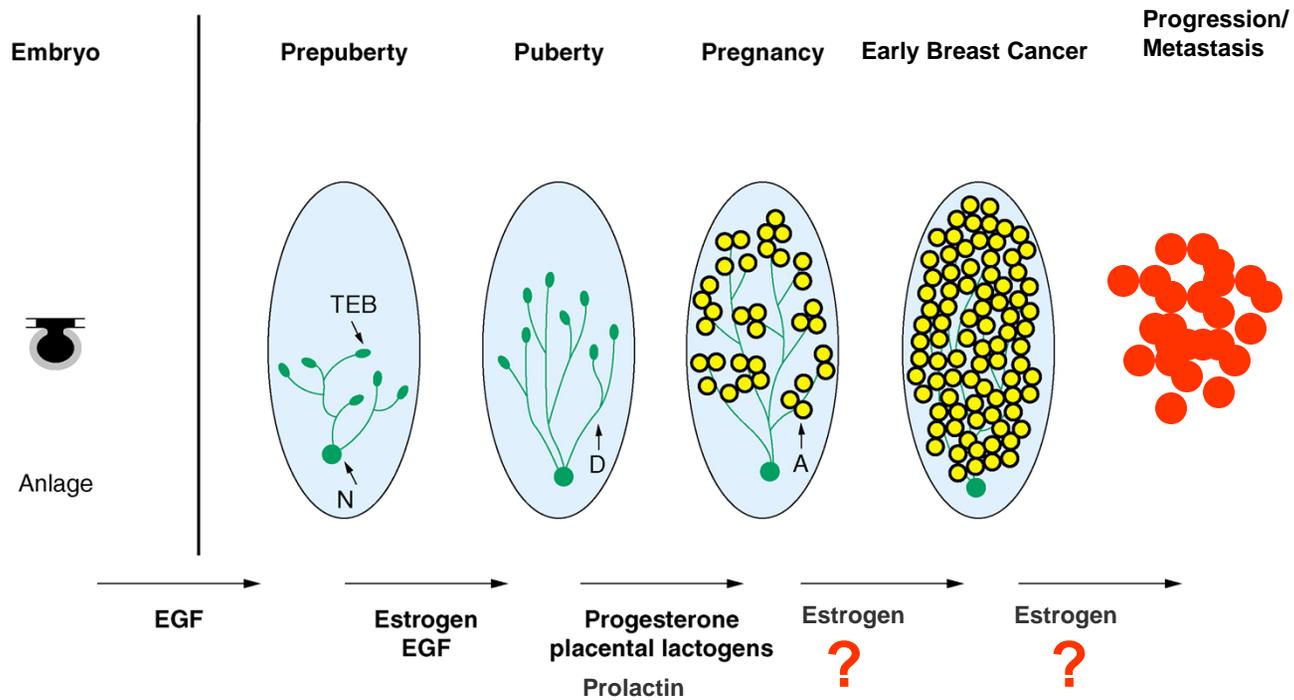
Chemical and Physical Carcinogenesis Branch:

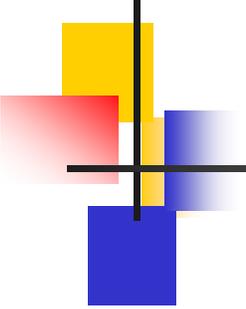
Dr. David Longfellow

Stages of Normal Breast Development



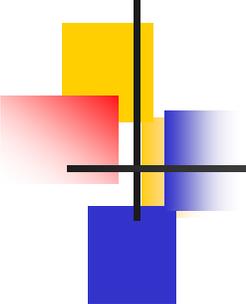
Stages of Breast Cancer Development





Role of Hormones at Various Stages of Breast Cancer Development

<u>Hormones:</u>	<u>Growth/ Development</u>	<u>Pregnancy/ Lactation</u>	<u>Early Breast Cancer</u>		<u>Progression/ Metastasis</u>
			<u>ER⁺</u>	<u>ER⁻</u>	
Estrogen	++	++	++	-	+
Progesterone	++	++	++	-	+
Prolactin	+	+++	+	+	+
IGF/Insulin/IGFr	++	+	++	++	++
TGF β	++	+	+	+	++
Glucocorticoids	++	+	+	+	?



Biology of Hormones and Breast Cancer Research Funding FY2002

Hormones	#	\$\$	Growth and Development	Pregnancy and Lactation	Early Breast Cancer (ER+ and ER-)	Progression and Metastasis
Estrogen (N=71)						
Estrogen	27	\$8,644	\$372	\$287	\$6,214	\$1,591
ER/SERMS	24	\$9,454**	\$1,091	\$57	\$6,590	\$1,386
Metabolism	10	\$3,200	\$0	\$0	\$3,200	\$0
Progesterone (N=8)						
Progesterone	5	\$1,345	\$613	\$152	\$580	\$0
PR	3	\$859	\$255	\$0	\$604	\$0
Prolactin	7	\$2,176	\$304	\$760	\$987	\$125
IGF/Insulin/Receptor	7	\$1,651	\$0	\$0	\$1,651	\$0
TGF-β	19	\$6,027	\$599	\$0	\$2,631	\$2,797
Glucocorticoids	4	\$1,329	\$0	\$0	\$1,329	\$0
Total	116	\$34,685				
Distribution			12%	5%	61%	22%
All Breast Cancer Grants in DCB	434	\$124,087				
* In Thousands						
** Co-funded NIDDK \$ 330						