Figures and legends:

Figure 1:

Advanced but focal stellate lung lesion in the right lung of a female newborn rabbit, birth weight 48.4 g, surviving 7.50 hours after vagotomy in 20% oxygen + 80% sulfur hexafluoride. Lesion rated at 7% of pleural surface. The outlines comport with the form of secondary pulmonary lobules in a contiguous zone, suggestive of lesion recruitment. Animal registration number 372J.

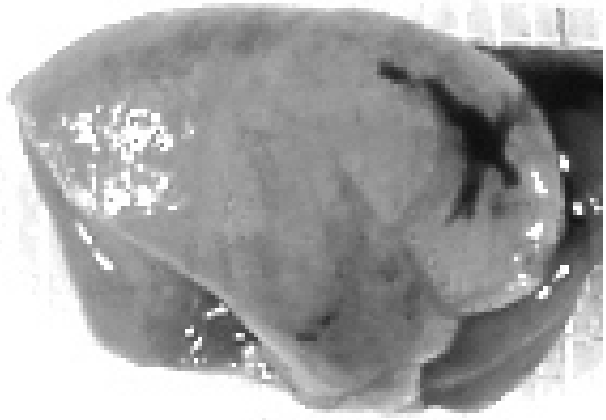


Figure 2:

Oxygen isolation chamber with four mice in a magnetic field. The four ring magnets extend beyond the floor of the chamber which is 3 mm thick. The lid is held by snap locks on both long sides. Oxygen flow at 1.0-1.5 L/min exits at the far end through several 3 mm round holes, confirmed as efficient by preliminary immersion tests in a water bath.

Figure 3:

Plot of mean gross lung change, oxygen-nitrogen mixtures, 3-21% oxygen, post vagotomy. S.E.M. at 7% oxygen was zero because the mean lung change was also zero.

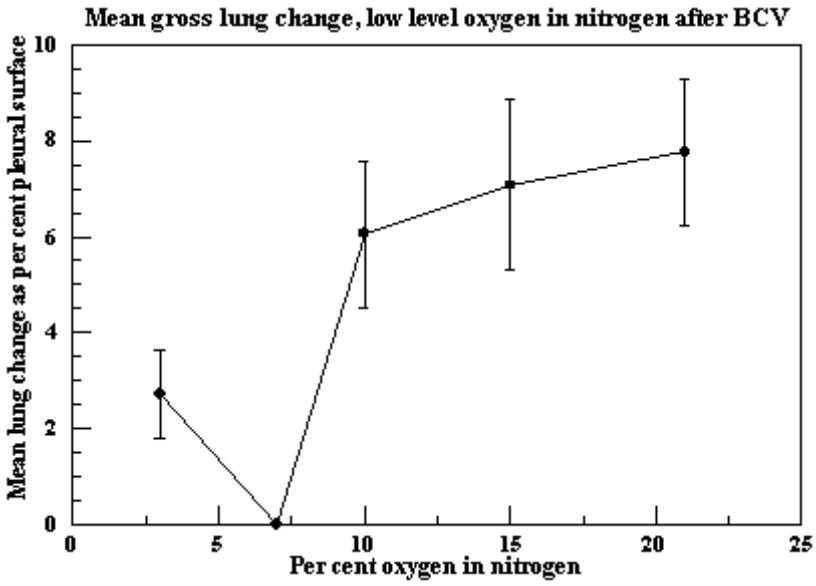


Figure 4:

Correlation between outer electron shell saturation and gross lung change: oxygen at 3% in hydrogen, helium, nitrogen, argon and sulfur hexafluoride. To slightly separate the helium and argon points at 100% saturation the helium data have been arbitrarily assigned a value of 99%. Solid line: non-BCV; dotted line: post-BCV.

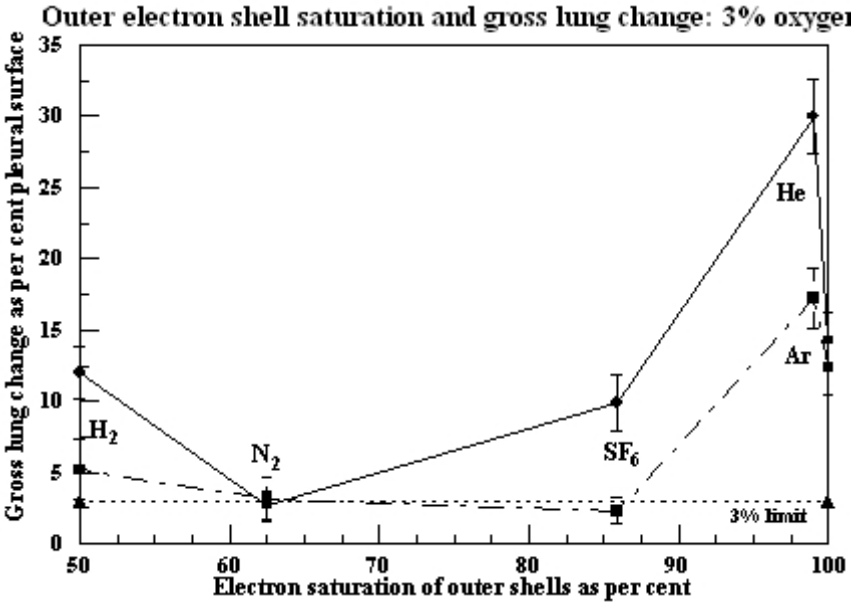


Figure 5:

Correlation between outer electron shell saturation and gross lung change viewed from a different perspective, separating the post-vagotomy and the non-BCV subsets: oxygen at 3% in hydrogen, helium, nitrogen, argon and sulfur hexafluoride. This shows clearly the prospects for covalent bonding with H_2, N_2, and SF_6. There are no prospects for covalent bonding with helium or argon.

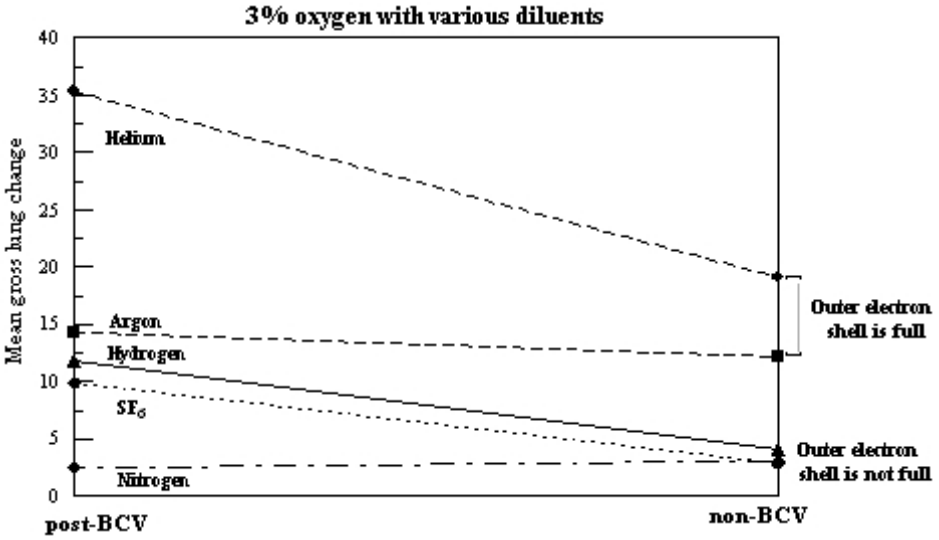


Figure 6:

Semi-log survival curves comparing hydrogen and nitrogen effects with and without vagotomy. There is no effective difference post-BCV but the wide separation of the non-BCV plots shows clearly the inhibitory effects of nitrogen on survival whereas hydrogen at 97% allows sufficient oxygen to exchange in the lung to yield survivals to circa 50 hours, despite only 3% oxygen.

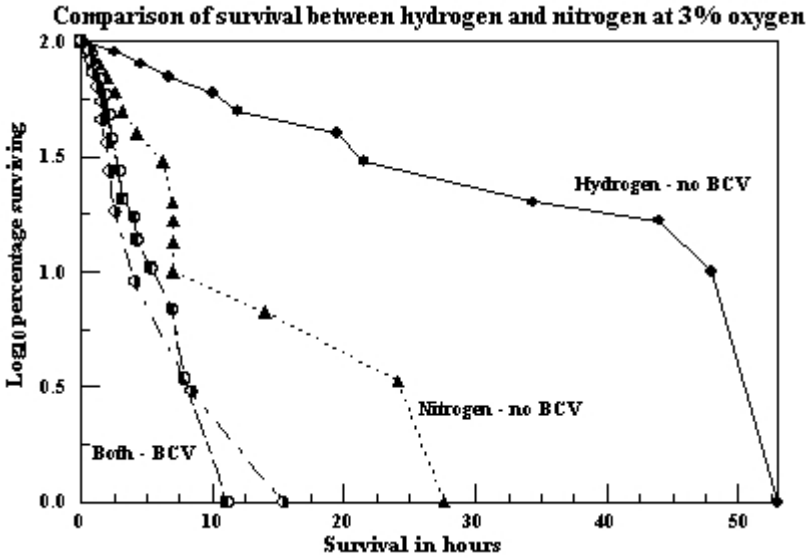
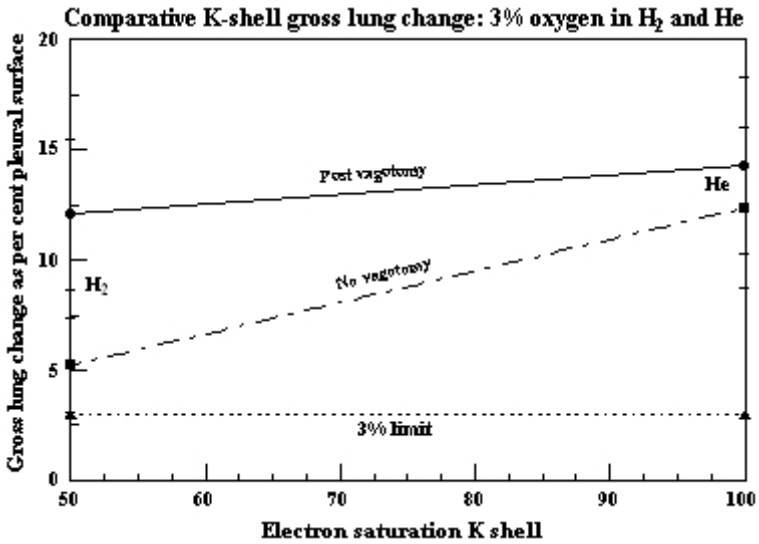


Figure 7:

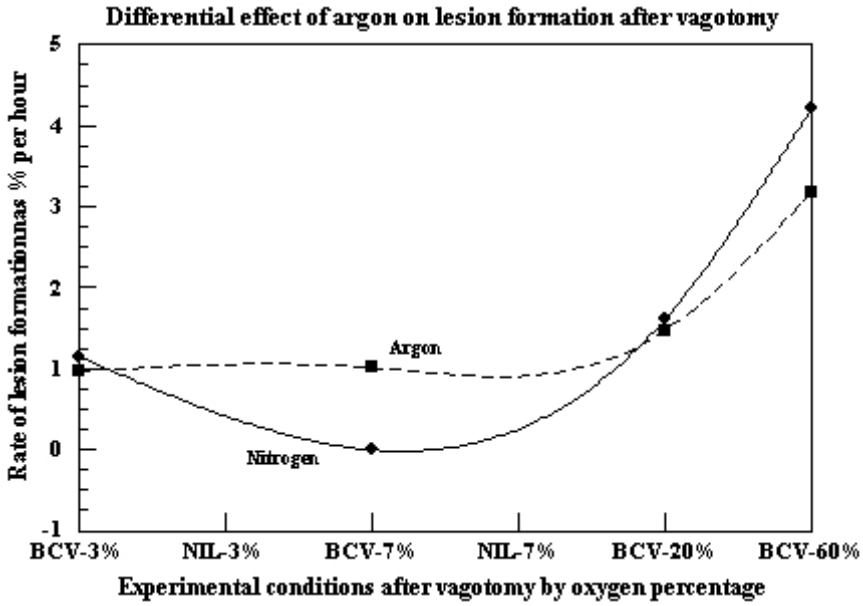
Enhancement of lung injury by helium relative to hydrogen and enhancement of lesion formation in hydrogen with the added burden of ventilatory distress induced by vagotomy.



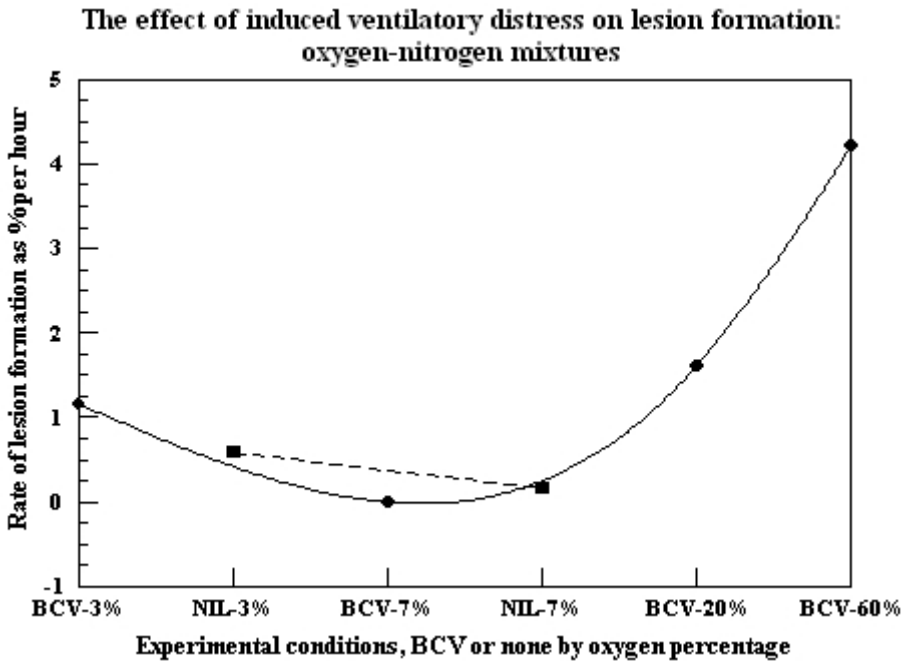
Figures 8a through 8d:

Differential effect on the rate of lesion formation by argon as substitute for nitrogen in low oxygen environments.

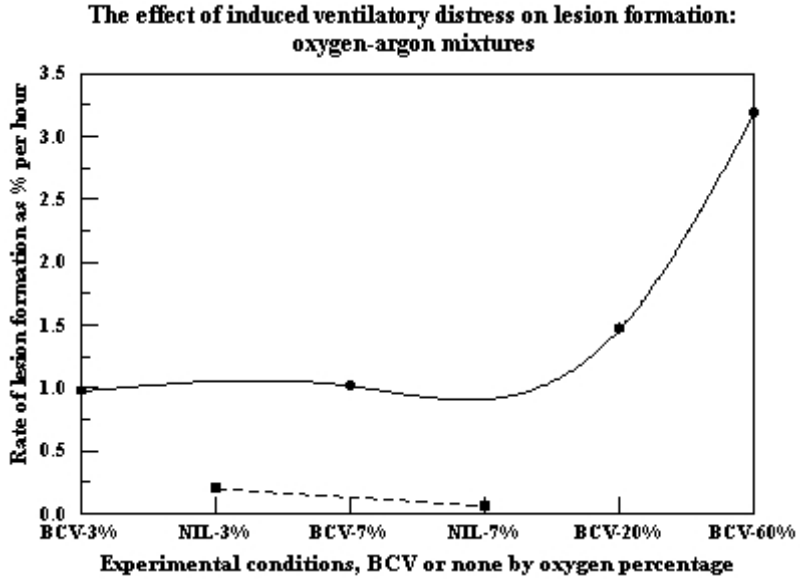
[8a] Plot of rate of lesion formation after vagotomy by argon and nitrogen by exposure from 3% to 60% oxygen. Nitrogen: solid line; argon: dotted line.



[8b] Differential plot of bilateral cervical vagotomy on the nitrogen effect. Post-vagotomy, solid line; non-vagotomy (NIL), dotted line.



[8c] Differential plot of bilateral cervical vagotomy on the argon effect. Post-vagotomy, solid line; non-vagotomy (NIL), dotted line.



[8d] Direct comparison between the rates of lesion formation by argon and nitrogen in the absence of vagotomy (NIL). Argon, solid line; nitrogen, dotted line.

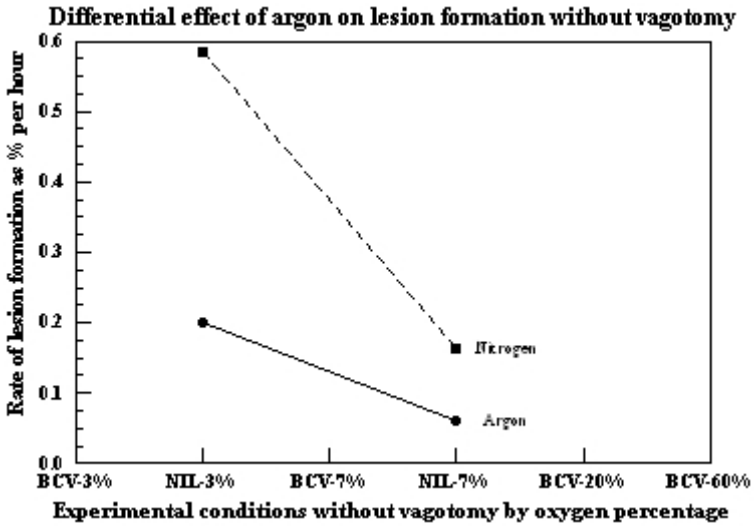


Figure 9:

Weight loss in 7% oxygen, 93% nitrogen as a function of elapsed time. Animals dying during the experimental run without vagotomy are an extension of the metabolic effect seen earlier after vagotomy. The least squares regression equation is: (weight loss as per cent) = 0.22014 x (survival in hours) + 5.49645. The curves are coterminous from 15 to 26 hours post ictal.

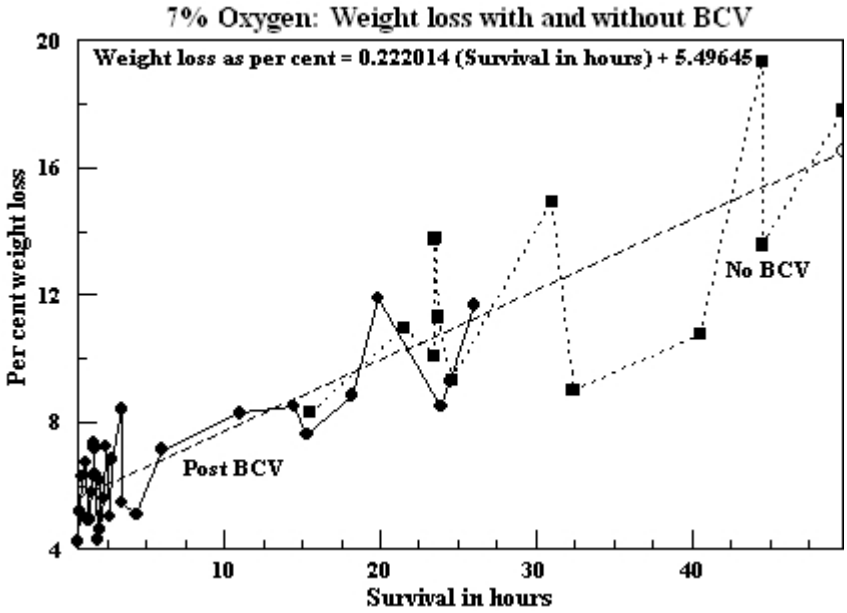


Figure 10:

Survival comparisons for newborn rabbits with ventilatory distress induced by thoracic restraint in 100% oxygen with and without a supplemental magnetic field up to +1200 gauss. Plot as per cent remaining shows clear separation of survival experience promoted by the magnetic field effect on oxygen.

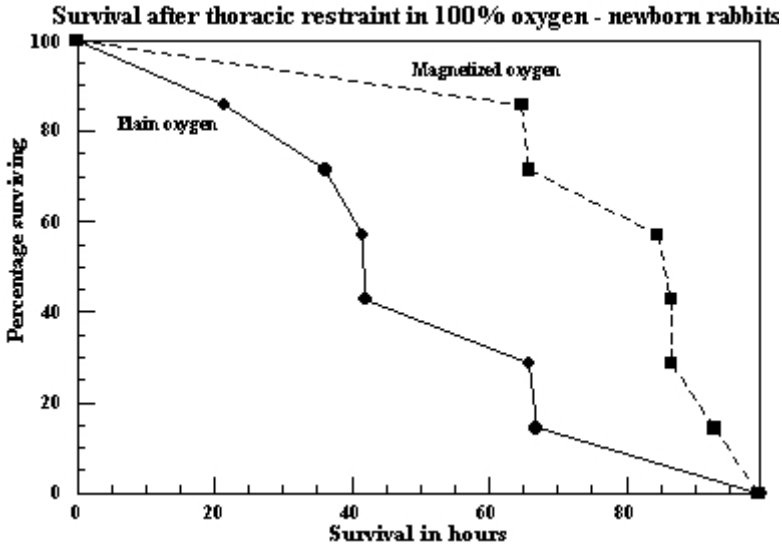


Figure 11.

Survival comparisons for young female adult white mice with no mechanical ventilatory distress induction in 100% oxygen with and without a supplemental magnetic field up to +1200 gauss. Plot as per cent remaining shows clear separation of survival experience promoted by the magnetic field effect on oxygen. The final survivor in magnetized oxygen succumbed earlier than the one in plain oxygen but divergence of the plots over the first 90% of the experience establishes the overall effect.